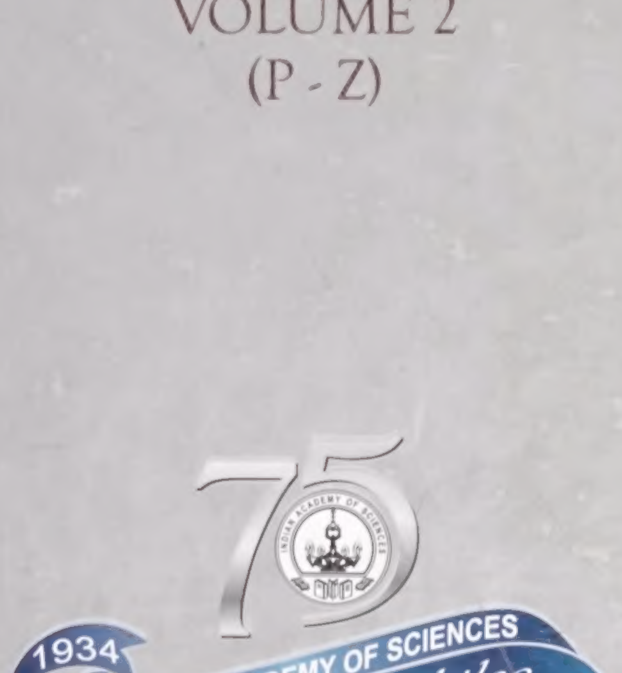
DIRECTORY OF FELLOWS

INDIAN ACADEMY OF SCIENCES

VOLUME 2
(P - Z)



DIRECTORY OF FELLOWS
Volume II (P–Z)

INDIAN ACADEMY OF SCIENCES

DIRECTORY OF FELLOWS
2009

Indian Academy of Sciences
Bangalore 560 080

Published by:
Indian Academy of Sciences
C V Raman Avenue
Post Box No. 8005
Sadashivanagar P O
Bangalore 560 080

Telephone: 80-2361 2546, 80-2361 1034
Telefax: 80-2361 6094
email: office@ias.ernet.in
Website: www.ias.ac.in

The information in this Directory has been corrected up to September 2009. Any further corrections may be communicated to the Executive Secretary of the Academy at the above address.

Typeset at Q-CON Technologies Pvt. Ltd. and Printed at Brilliant Printers Pvt. Ltd.,
Bangalore 560 094

CONTENTS

Foreword vii

Biographical Notes of Fellows (Volume II, P–Z) 681

Index 1223

Notes and Abbreviations 1230

Production Team:

M K Anitha
A D Chitralekha
Cicilia Edwin
G Chandramohan
G Madhavan
T D Mahabaleswara
N Padmaja
R Pushpavathi
P Rajesh
M Srimathi

Foreword

While the Year Book of the Academy gives short and concise information about each Fellow and the Honorary Fellow, it has been felt for quite a while that more information on their career and scientific work would be useful. We did bring out such a Directory containing such information during the Diamond Jubilee Year of the Academy in 1994; it is now time for us during the Platinum Jubilee Year to update this and present a new version of this Directory inclusive of all information that has been possible for us to obtain.

We are grateful for the assistance received from many persons both within the Fellowship and outside, in collecting information on many of our past Fellows. Yet it has not been possible to obtain the information on every Fellow and particularly past Fellows. Thus even the Directory presented here is still incomplete. We would be grateful if Fellows can suggest the names of colleagues, students or relatives of past Fellows who would be able to help us.

We would also be grateful if you can notify the Academy office of any errors that might have crept in the Directory. We would ensure that appropriate corrections are made in the next edition.

D. Balasubramanian
President 2007–2009

Padayatty, Joseph Devassy

Elected: 1986
Specialization: Biochemistry; Molecular Biology; Recombinant DNA
Date and Place of Birth: 10 July 1928; Karukutty, Kerala
Parents: Devassy Padayatty and Mariyam
Spouse and Children: Mary; one *s*, two *d*
Address: Karukutty 683 576, Ernakulam District, India
Tel. (0484) 261 2107 (R), Mobile: 99473 29527

Education: Madras Univ.: BSc 49, MA 52; St Louis Univ., USA: PhD 65.

Career: St. Berchman's College, Changanacherry: Demonstrator 49–50; St. Thomas College, Trichur and St. Albert's College, Ernakulam, Kerala and Madras Univ.: Lecturer 52–61; St. Louis Univ., USA: Graduate Fellow 61–65, Res. Assoc. in Microbiology and Biochem. 65–68; IISc, Bangalore: Pool Offr 68–69, Asst Prof. 69–78, Assoc. Prof. 78–83, Prof. 83–88.

Scientific Work: The major scientific activities were the studies on the molecular biology of colitis phage, foot and mouth disease virus and germination of rice embryos. During 1978, recombinant DNA including sequencing of DNA was started. Using these, the complete sequences of the genes for the structural proteins and lytic enzyme of colitis phage, glycl tRNA, rRNA, rRNA and partial sequence of histone genes of rice were obtained. The bidirectional transcription of H2A, H2B, H1 histone genes, regulation of transcription of tRNA Gly-Gcc gene, sites of initiation and termination of transcription of rRNA genes in rice were discovered. Also the production of a protein of foot and mouth disease virus by cDNA cloning and its immune response in cattle were achieved.

Important Publications: **(1)** Characterisation and immune response of a protein produced by cDNA colony of foot and mouth disease virus type Asia I 63/72 (1992) *Biochem. Intl.* **26**, 1003. **(2)** Initiation of transcription of rRNA in rice (1989) *Biochem. Biophys. Res. Commun.* **160**, 1117. **(3)** Effects of 5′ flanking sequence and 5′ internation control region of transcription of tRNA Gly-Gcc gene (1988) *Plant Mol. Biol.* **11**, 575. **(4)** Organization and bidirectional transcription of H2A, H2B and H1 genes in rice embryos (1983) *Nature* **306**, 82. **(5)** Transcriptional events during early phase of germination of rice embryos (1975) *Nature* **256**, 227.

Memberships: Fellow: INSA 87 • Member: Soc. of Biological Chemists, India • Assn of Microbiologists, India.

Padmanaban, Govindarajan

Elected: 1984
Position: NASI-Platinum Jubilee Chair, IISc, Bangalore
Specialization: Molecular Biology, Recombinant DNA, Malarial Parasite
Date and Place of Birth: 20 March 1938, Cuddapah, Andhra Pradesh
Parents: V Govindarajan and Janak
Spouse and Children: Mythily; one *s*, two *d*
Address: Department of Biochemistry, Indian Institute of Science, Bangalore 560 012, India
Tel (080) 2360 1492, (080) 2293 2540 (O), (080) 2334 2223 (R
email: geepee@biochem.iisc.ernet.in

Education: Univ. of Madras: BSc 58; IARI, Delhi: MSc 60; IISc, Bangalore: PhD 66.

Career: IISc, Bangalore: Asst Prof. 69–75, Assoc. Prof. 75–80, Prof. 80, Dy Dir 93–94, Dir 94–98; INSA C V Raman Res. Prof. 91-96; NASI Platinum Jubilee Chair 98–; Univ. of Chicago, USA: Vis. Sci./Prof. 73–86; JNCASR, Bangalore: Hon. Prof. 90–2009

Scientific Work: Established that haeme is a multifunctional regulator of cellular function. Elucidated the features of transcriptional regulation of Cyp II B1/B2 gene. Identified the haeme-biosynthetic pathway as a drug target in the malarial parasite. Demonstrated the efficacy of combination therapy with artemisinin derivative and curcumin in experimental malaria.

Important Publications: **(1)** Effects of B-N-oxalyl-L-L, B-diaminopropionic acid on uptake of glutamate by isolated synaptosomes (1974) *Nature* **249**, 469–471. **(2)** Haeme as multifunctional regulator (1989) *Trends Biochem. Sci.* **14**, 492–496. **(3)** A model for the transcriptional regulation of the CYP2B1/B2 gene in rat liver (1995) *Proc. Natl. Acad. Sci. USA* **92**, 9628–9632. **(4)** Import of d-aminolevulinate dehydratase into malarial parasite. Identification of a new drug target (2000) *Nature Medicine* **6**, 898–903. **(5)** Curcumin-artemisinin combination therapy for malaria (2006) *Antimicrob. Agents Chemother.* **50**, 1859–1860. **(6)** An alternative model for haeme biosynthesis in the malarial parasite (2007) *Trends Biochem. Sci.* **32**, 443–449

Memberships: Fellow: INSA 85, NASI 88, TWAS 93

Awards & Distinctions: P S Sarma Memorial Award 79 • S S Bhatnagar Award 83 • O P Bhasin Award 85 • Padma Shri 91 • Ranbaxy Award 93 • Distinguished Biotechnologist 2003 • Padma Bhushan 2004 • NASI-Platinum Jubilee Chair 2007

Padmanabhan, Kuppuswamy Anantha

Elected: 1994
Position: Mercator Prof., Univ. of Muenster, Germany
Specialization: Mechanical Metallurgy; Metal Forming; Plasticity and Superlasticity; Nanotechnology
Date and Place of Birth: 5 April 1945; Trivandrum, Kerala
Parents: P S Kuppuswamy and P K Subbulakshmi
Spouse and Children: Gita; three s
Address: Inst. of Materials Phys., Univ. of Muenster, Wilhelm–Klemm–strasse
10, 48148, Muenster, Germany
Tel. (+49) 251 833 9008 (O), (+49) 251 833 9970 (R)
email: kap@anauniv.edu, ananthaster@gmail.com, kap19452002@yahoo.co.in
URL: http://home.iitk.ac.in/~kap

Education: BHU, Varanasi: BSc Hons 68; Univ. of Cambridge, UK: PhD 71.

Career: BHU, Varanasi, Dept of Metallurgical Engg, Inst. of Technol.: Lecturer 72–74, Reader 74–79; IIT Madras, Dept of Metallurgical Engg: Prof. 80-2001, Head 82–85, Head of Metal Forming Lab. 80, Chmn, Centre for Continuing Education 86–90; Indian Inst. of Metals: Jt Hon Sec. 83–84, Chmn of Madras Chapter 84–85; Centre for Technology and Environment, Karlsruhe, Germany: Outstanding Guest Sci. 2001–02; Sylvan Intl Univ., Hyderabad: Rector 2002–04; Univ. of Hyderabad: Jawaharlal Nehru Prof. 2004–06; Anna Univ.: Prof. of Eminence 2006–09; Univ. of Muenster, Germany: Mercator Prof. 2009–.

Scientific Work: Specialized in the phenomenon of superplasticity and its applications in metal forming. Pioneered experiments on the effects of texture, compressive forces, specimen size and cooperative grain/interphase boundary sliding on superplastic flow and the study of the fracture surfaces. Explained inverse Hall–Petch effect in nanomaterials. Studies on the formability of extra deep drawing and LPG grades of steel have led to a new theory for predicting the forming limit diagrams of sheet materials. Investigated the effects of thermo mechanical processing and welding on the low cycle fatigue and stress corrosion cracking behaviour of austenitic stainless steels which are of importance to advanced materials development for fast reactors.

Important Publications: **(1)** *Superplasticity* (1980) Springer Verlag, Berlin, 330 pp. **(2)** *Super plastic flow: Phenomenology and mechanics* (2001) Springer Verlag, Berlin, 380 pp. **(3)** On the prediction of the forming limit diagram of sheet metals (1992) *Intl. J. Mech. Sci.* **34**, 364–374. **(4)** A model for grain boundary sliding and its relevance to optimal structural superplasticity. Theory (1996) *Mater. Sci. Technol.* **12**, 391–399. **(5)** A model for the deformation of nanocrystalline materials (1997) *Philos. Mag.* **76B**, 559–571.

Memberships: Fellow: INAE 93; NASI 2001; Indian Inst. of Metals; Inst. of Engineers.

Awards & Distinctions: Alexander von Humboldt Fellowship 85–86 • Hon. Academician, USSR Acad. of Sci. (now called Bashkirian Acad. of Sci.) 92.

Padmanabhan, Suchindrum Yegnanarayana*

Elected: 1970
Specialization: Plant Pathology, Rice Diseases, Management and Epidemiology of Rice Disease, Breeding for Resistance to Rice Diseases
Date and Place of Birth: 11 September 1916, Trivandrum, Kerala
Parents: Yeganarayana
Spouse and Children: Alamelu; four d
Last Address: Swagatham, 97, Venkatachala Mudali Street, Madras 600 004, India
***Deceased:** 29 January 1985

Education: Univ. of Madras: BSc Hons 37, MA 50; IARI: Associateship 39; Utkal Univ.: DSc 67.

Career: Central Sugarcane Res. Station, Bihar: Sr Sci. Asst. 40–43; Govt of Bengal: Mycologist 43–46; Sugarcane Res. Station, Anakapalle: Asst. Mycologist 47; Central Rice Res. Inst., Cuttack: Mycologist 47–66, Dir 66–76.

Scientific Work: First to demonstrate the existence of variation among the isolates of rice blast fungus. Described a novel method for mass screening of rice varieties for resistance to this very important disease. Studies on epidemiology and forecasting of blast disease helped to develop an economic schedule of management of this disease through chemicals. Established the role of helminthosporiose of rice in the Great Bengal Famine of 1942. Successfully completed breeding projects to evolve high yielding varieties with superior grain quality, earliness, dormancy and tolerance to pests. Established suitable multiple cropping pattern in Eastern regions of the country.

Memberships: Fellow: Indian Soc. of Plant Breeding and Genetics; Madras Science Foundation; Phytopathological Soc. of India • President: Indian Phytopathological Soc.

Awards & Distinctions: Rafi Ahmed Kidwai Memorial Award 71 • Rafi Ahmed Kidwai Award 74

Padmanabhan, Thanu

Elected: 1992
Position: Prof. and Dean, IUCAA, Pune
Specialization: Gravitation, Quantum Theory, Cosmology, Structure Formation
Date and Place of Birth: 10 March 1957, Trivandrum, Kerala
Parents: N Thanu Iyer and K V Laxmi
Spouse and Children: Vasanthi; one d
Address: Hamsa, Inter-University Centre for Astronomy and Astrophysics, Ganeshkhind, Pune 411 007, India
Tel: (020) 2560 4202, (020) 2560 4100 (O), (020) 2569 2922 (R)
email: paddy@iucaa.ernet.in, nabhan@iucaa.ernet.in; URL: http://www.iucaa.ernet.in/~paddy

Education: [illegible] BSc 77, MSc 79; TIFR, Bombay Univ.: PhD 83

Career: [illegible] 80–83, Fellow 83–87, Reader and Assoc. Prof. 87–92; Cambridge Univ., UK: [illegible] Astronomer 2002–03, 2009; Caltech, USA: [illegible]

Scientific Work: Research activities span areas on cosmology, gravitation and quantum field theory in curved space-times. Provided a systematic analysis of the semiclassical limit of quantum gravity and a procedure for interpreting the predictions of quantum cosmology. Recently involved in an attempt to reinterpret gravity as an emergent phenomenon.

Important Publications: **(1)** *Structure formation in the Universe* (1993) Cambridge Univ. Press. **(2)** *Cosmology and astrophysics through problems* (1996) Cambridge Univ. Press. **(3)** Theoretical astrophysics Vol I. *Physical processes* (2000) Cambridge University Press. **(4)** Theoretical astrophysics Vol II. *Stars and stellar systems* (2001) Cambridge University Press. **(5)** Theoretical astrophysics Vol III. *Galaxies and cosmology* (2002) Cambridge Univ. Press, Cambridge.

Memberships: International Astronomical Union • Chmn: GMRT Time Allocation Committee. INSA IAU National Committee • President: Commission 47 on Cosmology of International Astronomical Union • Vice-Chmn: Commission 19 (Astrophysics) of International Union of Pure and Applied Physics • Fellow: NASI 93; INSA 2000; Maharashtra Acad. of Sci.

Awards & Distinctions: IASc Assoc. 84–98 • INSA Young Scientist Award • Birla Science Prize • S S Bhatnagar Award • A C Banerji Memorial Lecture Award • Millennium Medal (CSIR) • Sackler Distinguished Astronomer, Institute of Astronomy, Cambridge • Al-Khwarizmi International Award • Homi Bhabha Fellowship • G D Birla Award for Scientific Research • Miegunah Fellowship Award, Univ. of Melbourne • Padma Shri • INSA Vainu-Bappu Medal, 2007 • DST J C Bose Fellowship.

Pai, Mangalore Anantha

Elected: 1979
Position: Emeritus Prof., Univ. of Illinois, USA
Specialization: Power Systems; Stability; Control; Computation
Date and Place of Birth: 5 October 1931; Mangalore, Karnataka
Parents: M Ramachandra Pai and Janaki
Spouse and Children: Nandini; one *s*, three *d*
Address: Department of Electrical and Computer Engineering, University of Illinois,
1406 West Green Street, Urbana, IL 61801 USA
Tel. (+1-217) 333 6790 (O), (+1-217) 344 0977 (R), Mobile: 217-417-9725
email: mapai@illinois.edu; URL: http://www.indusscitech.net

Education: Univ. of Madras: BE 53; Univ. of California, USA: MS 58, PhD 61.

Career: Bombay Electric Supply Co.: Engineer 53–57, Univ. of California, USA: Teaching Assoc. 58–61, Vis. Asst Prof. 61–63, IIT Kanpur, Asst Prof. 63–66, Assoc. Prof. 66–69, Prof. 69–81, Dean of R&D 76–78, Univ. of Illinois, USA: Prof. 81–2003, Emeritus Prof. 2003–.

Scientific Work: Applied Lyapunov's method for stability assessment of power systems and later sensitivity based approach in dynamic security assessment. Proposed a systematic approach to small signal analysis as well as voltage stability of power systems. Developed in house expertise in computer applications for UP State Electricity Board.

Important Publications: **(1)** *Energy function analysis of power systems* (1989) Kluwer Publishing. **(2)** *Power system stability and control* (1998) Prentice Hall. **(3)** *Small signal analysis of power systems* (2003) Narosa

Publishing. **(4)** *Computer techniques in power system analysis* (1979, 2004) McGraw Hill, India. **(5)** *Power circuits and electromechanics* (2003) Stipes Publishing, Champaign (2007) Narosa Publishing, India.

Memberships: Fellow: Institution of Engg, INSA 80, INAE 91, US Inst. of Electrical and Electronics Engineering.

Awards & Distinctions: S S Bhatnagar Award 74 • FICCI Award 78

Paintal, Autar Singh*

Elected: 1986
Specialization: Physiology
Date and Place of Birth: 24 September 1925, Mogok, Myanmar
Parents: Man Singh and Rajwans Kaur
Spouse and Children: Ashima Anand; one s, two d (Gautam, Anita, Priti)
Last Address: DST Centre for Visceral Mechanism, Vallabhai Patel Chest Institute, Delhi University, Delhi 110 007
***Deceased:** 22 December 2004

Education: Univ. of Lucknow: MBBS 48, MD 50; Univ. of Edinburgh, UK: DSc 60.

Career: King George Medical Coll., Lucknow: Lecturer 48-52; Ministry of Defence, New Delhi: Control Offr. 52–54, AIIMS, New Delhi: Prof. of Physiology 58–64; V P Chest Inst.: Asst Dir 54–56, Dir 64–90, Programme Dir 81, Univ. College of Med. Sci., Univ. of Delhi: Principal 71–72; ICMR: Dir General 86–91.

Scientific Work: Introduced a new index for evaluating galvanic skin responses in 1951, new techniques for recording impulses from single active fibres from nerves and proving their conduction velocities and a method for locating visceral receptors. Discovered type B atrial receptors; gastric stretch receptors responsible for the immediate satiation of hunger and thirst; ventricular pressure receptors; mucosal mechanoreceptors of the intestines and pressure-pain receptors of muscles. Discovered J receptors and showed that they produce tachypnoea and breathlessness, that they are interstitial volume receptors and that they produce inhibition of somatic muscles. Later showed that they are stimulated by increase in blood flow, and finally, that they produced sensations in the throat leading to dry cough. Showed that they were no chemoreceptors in the pulmonary circulation and that aortic chemoreceptors were not stimulated by CO_2. Discovered the principle relating to the relative dilution of multiple solutes in flowing fluids. Using this principle, introduced a new method for measuring *in vivo* the blood concentration of injected drugs.

Important Publications: **(1)** A study of right and left atrial receptors (1953) *J. Physiol.* **120**, 596–610. **(2)** Natural stimulation of type B atrial receptors (1963) *J. Physiol.* **169**, 116–136. **(3)** Effect of drugs on vertebrate mechanoreceptors (1964) *Pharmacol. Rev.* **16**, 341–380. **(4)** Vagal sensory receptors and their reflex effects (1973) *Physiol. Rev.* **53**, 159–227. **(5)** Lung and airways receptors, in *Control of respiration* (1983) Croom Helm, London. pp 78–107.

Memberships: Fellow: INSA 72, Royal Soc. of Edinburgh 66, Royal Soc. of London 81, National Acad. of Medical Sci., Royal College of Chest Physicians, Asiatic Soc., TWAS.

Awards & Distinctions: [illegible] Devi Amir Chand Prize 56 • Basanti Devi Amir Chand Prize 57 • B C Roy [illegible] Award [illegible] • [illegible] Medal 82 • Rameshwardas Birla National Award 82 • Jawaharlal Nehru Award [illegible]

Science 83 • Acharya J C Bose Medal 85 • AIIMS Silver Jubilee Award 86 • Padma Vibhuhan 86 • President: INSA 87–88 • Universities of Banaras, Delhi, AMU, Patiala, Punjab, Lucknow: DSc (hc).

Pal, Benjamin Peary*

Elected: 1941, 1975
Specialization: Genetics; Plant Breeding
Date and Place of Birth: 26 May 1906; Mukandpur, Punjab
Parents: Rala Ram Pal
Last Address: Indian Agricultural Research Institute, New Delhi, India
***Deceased:** 14 September 1989

Education: Univ. of Rangoon, Burma: MSc 29; Univ. of Cambridge, UK: PhD 33;

Career: Imperial Res. Inst., Bihar & New Delhi: Second Economic Botanist 33–50, Dir 50–65. ICAR., New Delhi: Dir General 65–72.

Scientific Work: Worked on the problem of hybrid vigour in wheat. Took up the question of breeding for disease resistance in earnest and was able to release a series of wheat known as the 700 series and the 800 series which were not only good yield and grain quality but also had considerable degree of resistance to the three rusts of wheat which do a great deal of damage to the crops in India. Initiated a strong programme for potato research to do serious study of the tobacco leaf curl disease in India and showed that it was caused by a virus. Has bred many varieties of roses, like `Dr Homi Bhabha', `Raja of Nalagarh' and raised bougainvillea varieties.

Memberships: Fellow, London Royal Soc.; Lenin All Union Acad. of Agri. Sciences, Moscow; INSA 46; Indian Soc. of Genetics and Plant Breeding.

Awards & Distinctions: Padma Shri 59 • Padma Bhushan 68 • Rafi Ahmed Kidwai Memorial Prize 57 • Birbal Sahni Medal 62 • Srinivasa Ramanujan Medal of Indian Bot. Soc. 64 • Barclay Medal of Asiatic Soc. 71 • INSA Aryabhata Medal 80 • INSA B P Chatterjee Award 82 • ISCA Sir William Jones Medal 82 • Sanjay Gandhi Memorial Award 82 • O P Bhasin Award 85 • Punjab Univ., Sardar Patel Univ., G B Pant Univ., HAU, OUAT: DSc h c.

Pal, Gaya Prasad

Elected: 1994
Position: Prof. and Head, Dept. of Anatomy, Modern Dental College and Research Centre, Gandhinagar
Specialization: Human Anatomy; Clinical Anatomy; Biomechanics of Spine
Date and Place of Birth: 7 June 1950; Indore, Madhya Pradesh
Parents: Baboolal Pal and Keserbai
Spouse and Children: Pushpa; one *s*, one *d* (Sandeep, Neeta)
Address: Department of Anatomy, Modern Dental College and Research
Centre, Gandhinagar, Indore 453 112, India
Tel. (0731) 288 2693/290 (O), (0731) 249 7600 (R), Mobile: 94254 96354
email: gp_pal50@rediffmail.com

Education: Univ. of Indore: MBBS 73, MS 77; South Gujarat Univ.: DSc 93.

Career: MGM Med. College, Indore: Demonstrator of Human Anatomy 74–78, Prof. and Head of Anatomy 92, Govt. Med. College, Surat, Dept of Anatomy: Asst Prof. 78–84, Assoc. Prof. 84–92, Med. College of Pennsylvania, USA, Dept of Anatomy: Vis. Assoc. Prof. 85–86, MP Shah Med. College, Jamnagar: Prof. and Head of Anatomy 92–.

Scientific Work: Studied the biomechanics of the spine, in order to enhance the understanding of causative factors of several orthopaedic problems such as cervical instability, kyphosis, scoliosis, low back pain and spondylosis. Studies based on morphological and morphometric investigations suggested that weight is transmitted through three columns in the neck and through two columns in the thoracic and lumbar region; because of change in curvature of the column in different regions, load shifts between neural arch and vertebral body in accordance with the passage of line of gravity, facet joints, pedicle and laminae are highly loaded elements, and the ribs are involved in transmission of load. Confirmed findings by experimental and trabecular bone studies, and also suggested that laminectomy between C3 and C6 is relatively safe, while laminectomy at C2 and C7 lead to cervical instability. Studies on the biomechanics of the thoracic skeleton have helped generate a new hypothesis for the mechanism of development of idiopathic scoliosis which was further experimentally tested on rabbits.

Important Publications: **(1)** A study of weight transmission through the cervical and upper thoracic region of the vertebral column in man (1986) *J. Anatomy (London)* Cambridge University Press, **148**, 245–261. **(2)** Transmission of weight through lower thoracic and lumber region of vertebral column in man (1987) *J. Anatomy (London)* Cambridge University Press, **152**, 93–105. **(3)** A study of thoracic skeleton in relation to its biomechanics (1989) *J. Anatomical Soc. India* **38**, 145–161. **(4)** The mechanism of production of experimental scoliosis in rabbits (1991) *Spine (Am. Vol.)* **16**, 137–142. **(5)** A study of motoneuron groups and motor column of the human spinal cord (1991) *J. Anatomy (London)* Cambridge University Press, **195**, 210–223.

Memberships: Fellow: NASI 95; NAMS 95 • Life Member: Anatomical Soc. of India.

Awards & Distinctions: ICMR Shakuntala Amir Chand Prize 88 • S S Bhatnagar Award 93 • Dharamnarayan Memorial Gold Medal of Anatomical Soc. of India 86 • Mahdi Hassan Award 91 • H J Mehta Award 90 and 92 • Liza Chacko Award 85.

Pal, Manoj Kumar

Elected: 1974
Specialization: Nuclear Physics
Date and Place of Birth: 26 October 1932; Morbhanga, West Bengal
Parents: Kalipada Pal and Kalyani
Spouse and Children: Dipti; one s
Address: Apartment 1B, 41, Lala Lajpat Rai Sarani, Kolkata 700 020, India
Tel. (033) 2475 6829 (R), Mobile: 94335 81746

Education: Univ. of Calcutta: BSc Hons 51, MSc 53, PhD 59.

Career: Univ. of Maryland, USA: Res. Assoc. 58–59; Princeton Univ., USA: Instructor 60; Saha Inst. of Nuclear Phys., Calcutta: Lecturer 60–61, Reader 61–64, Assoc. Prof. 64–69, Prof. 69–81, Sr Prof. 82–83, Dir 83–92; AERE, UK: Vis. Fellow 61–62; MIT, USA: Vis. Staff 65–66; Oregon Univ., USA: Vis. Assoc. Prof. 66–67, ICTP Courses on Nuclear Phys.: Dir 69, 71, 73, 84; Flinders Univ., Australia: Nuffield Foundation Fellow 70; SERC, UK: Sr Fellow 79, 90–91; Sr Sci. (CSIR) 92–97.

Scientific Work: Done research on various aspects of nuclear theory (authored a text book for PG level).

Important Publications: **(1)** *Theory of nuclear structure* (1982) EWP, Van Nostrand. **(2)** *Old wisdom and new horizon* (2008) (History of science, philosophy and culture in Indian civilization) 15, 5, Viva Books. **(3)** *Theory of relativity – Applications to astrophysics and cosmology* (manuscript to be published). **(4)** Theory of nuclear vibration *theory of nuclear structure* (1969) Trieste Lectures, 547–695 (1970) IAEA, Vienna. **(5)** ATDHF fission paths in some actinide nuclei (1993) *Nucl. Phys.* **A556**, 201–227, North Holland.

Memberships: Fellow: INSA 90.

Pal, Sankar Kumar

Elected: 1996
Position: Distinguished Sci.; Dir, ISI, Kolkata
Specialization: Pattern Recognition and Machine Learning; Image Processing; Data Mining; Soft Computing; Web Intelligence
Date and Place of Birth: 13 September 1950; Calcutta, West Bengal
Parents: Sunity Kumar Pal and Parul Bala
Spouse and Children: Amita; two *s* (Dhiman, Anshuman)
Address: Indian Statistical Institute, 203, BT Road, Kolkata 700 108 India
Tel. (033) 2577 3084, 2575 3101 (O), (033) 2577 2030 (R), Mobile: 98311 01500
email: sankar@isical.ac.in, sankarpal@yahoo.com; URL: http://isical.ac.in/~sankar

Education: Calcutta Univ.: BSc Hons 69, BTech 72, MTech 74, PhD 79; Imperial College, London Univ.: PhD and DIC 82.

Career: ISI, Kolkata: Computer Engr 76–81, Assoc. Prof. 82–87, Prof. 87–93, Head of Machine Intelligence Unit 93–98, Jawaharlal Nehru Fellow 93–95, Disting. Sci. 98–, Dir 2005–; Imperial Coll., London: Commonwealth Scholar 79–81, MRC Postdoc Fellow 81–83; Univ. of Calif., Berkeley: Fullbright Vis. Sci. 86–87; NASA Johnson Space Center: Sr Res. Assoc. 90–92, 94.

Scientific Work: Has made pioneering contribution to pattern recognition, machine intelligence and image processing, including management of uncertainties, using soft computing approaches, particularly when the pattern indeterminacy is due to inherent vagueness rather than randomness. This includes development of theory, formulation of algorithms and tools, and demonstrating their success to real life ambiguous problems, including data mining, web intelligence, bioinformatics, biometry, and space mission, using fuzzy sets, rough sets, neural networks, neuro-fuzzy, and rough-fuzzy computing and both individually and in combination. It is shown how symbiotic integration of these technologies can enhance the efficiency, application domain and the capability of flexible information processing of the system. Founded the Machine Intelligence Unit and the Centre for Soft Computing Research: A National Facility, ISI Kolkata.

Important Publications: **(1)** *Fuzzy mathematical approach to pattern recognition* (1986) John Wiley & Sons (Halsted), NY. **(2)** *Neuro-fuzzy pattern recognition: Methods in soft computing* (1999) John Wiley, NY. **(3)** Foundation of soft case-based reasoning (2004) John Wiley, NY. **(4)** Pattern recognition algorithms for data mining (2004) Chapman & Hall CRC Press, Boca Raton, FL. **(5)** *Classification and learning with genetic algorithms: Applications in bioinformatics and web intelligence* (2007) Springer Verlag, Heidelberg.

Memberships: Fellow: NASI 93; INSA 94; INAE 95; TWAS 98.

Awards & Distinctions: S S Bhatnagar Prize 90 • Vikram Sarabhai Res. Award 93 • J N Fellowship 93 • NASA Space Act Tech Brief Award 93 • Bhasin Award 98 • G D Birla Award 99 • Khwarizmi Intl Award 2000 • INSA-Zaheer Medal 2001 • FICCI Award 2002 • ISC-Mahalanobis Gold Medal 2005 • NRC-NASA Sr Research Award 89 • Fulbright Visiting Fellowship 86 • ONRIFO Fellowship 2004 • J C Fellowship 2007.

Pal, Sourav

Elected: 1996
Position: Sci. and Head, Phys Chem. Dn, NCL, Pune
Specialization: Electronic Structure Theory; *ab Initio* Quantum Chemistry; Chemical Reactivity; *ab Initio* Molecular Dynamics
Date and Place of Birth: 12 May 1955; Ranchi, Bihar
Parents: Shanti Pal and Sati
Spouse and Children: Ritasri; one *s*
Address: Physical Chemistry Division, National Chemical Laboratory, Pune 411 008, India
Tel. (020) 2590 2001, (020) 2590 2499 (O), (020) 2589 3850 (R), Mobile: 98903 35662
email: s.pal@ncl.res.in; URL: http://www.ncl.res.in/spal

Education: IIT Kanpur: MSc 77; Calcutta Univ.: PhD 85.

Career: NCL: Sci. 82–. Univ. of Florida: Postdoc Res. 86–87; Univ. of Heidelberg, Germany: AVH Fellow; Inst. of Molecular Sci., Okazaki, Japan: Vis. Prof. 97; Tokyo Univ.: Vis. Prof. 98.

Scientific Work: Contributions have been in the following areas of theoretical chemistry: theoretical development on molecular electric properties using many-body coupled-cluster theory; theoretical investigation of hard-soft acid-base relation; study of electron–molecule scattering using coupled-cluster theory; computational materials science on zeolites and dehydrogenaton of metal hydrides; density functional study of molecular properties; magnetizabilities of molecules using multi-reference coupled-cluster method.

Important Publications: **(1)** *J. Phys. Chem.* (1993) **97**, 4404–4406. **(2)** *J. Am. Chem. Soc.* (2000) **122**, 4145–4153. **(3)** *J. Chem. Phys.* (2001) **114**, 1981–1988. **(4)** *J. Chem. Phys.* (2004) **120**, 6381–6398. **(5)** *Chem. Phys.* Chem. (2008) **9**, 928–934.

Memberships: Fellow: Maharashtra Acad. of Sci.; NASI 98; INSA 2003 • Life Member: Soc. of Scientific Values.

Awards & Distinctions: S S Bhatnagar Award 2000 • DST J C Bose Fellowship • CRSI Silver Medal 2009 • INSA Young Scientist Award 87 • CSIR Young Scientist Award 89 • P B Gupta Memorial Award 93 • Bimla Churn Law Memorial Lecture Award, IACS 2005 • INSA Jagdish Shankar Memorial Lecture Award 2006 • Dai-Ichi Karkaria Endowment Fellow 2004–05.

Pal, Yash

Elected: 1967
Specialization: Physics; Astrophysics; Space Technology; Communications
Date and Place of Birth: 26 November 1926; Jhang, Pakistan
Parents: Ram Piyari Lal and Lakshmi Devi
Spouse: Nirmal
Address: 11B, Super Delux Flats, Sector 15A, Noida 201 301, India
Tel. (0120) 251 2075 (R), Mobile: 98112 91556
email: palyash.pal@gmail.com

Education: Panjab Univ.: MSc 49; MIT, USA: PhD 58.

Career: TIFR, Bombay Member of Faculty 49 and Prof 73–83; Space Application Centre, Ahmedabad Dir 73–80, Unispace 82 Sec General, Planning Commission. Chief Consultant 83–84; DST, Govt of India, New Delhi Secretary 84–86, ISRO Distinguished Sci. 80–83; UGC Chmn 86–91, Nuclear Sci. Centre, New Delhi, IUCEC & INFLIB-NET Chmn of Steering Committee 91, Chmn, Natl Inst. of Design, Natl Council of Sci. Museums, Panjab Univ Jawaharlal Nehru Chair in Technology 87–89; National Res. Fellow 95, National Mahatma Gandhi Fellow 2004

Scientific Work: Work has led to first observation of negative *K* meson; first observations of pair production of elementary particles, elucidation of properties of *K*-mesons and hyperons, first measurement of K_1 K_2 mass difference; understanding the role of cosmic and cosmic-ray neutrons; prediction of rise in *p-p* cross section, recognition of importance of excited states of particles in multiple meson production at high energies, first development of the leaky box model of cosmic-ray propagation in the galaxy and aspects of cosmic ray phenomenology in the atmosphere and the ground below. Has done extensive work in the theory and practice of communication for development, and has proposed new ways of using modern technology, including space technology in ways appropriate for developing countries.

Memberships: Fellow: INSA 77; INAE 87 • Member: UN Advisery Committee on Sci. and Technol. for development.

Awards & Distinctions: Padma Bhushan 76 • Marconi International Fellowship Award 80 • Assn of Space Explorers Annual Award 89 • Shiromani Award 89 • First Lord Perry Award for Excellence in Distance Edn 92 • Arthur C Clarke Award for Commun. and Space Technol. 94 • Asiatic Soc. Sir William Jones Mem. Gold Medal 96 • NCSTC Award for Science Popularization 2000.

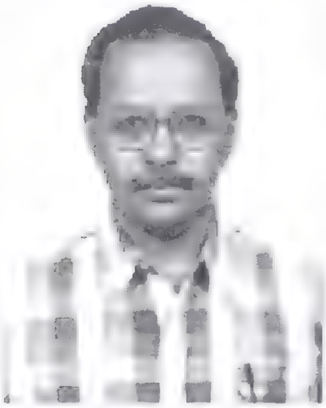
Palacios, Gonzalo*

Elected: 1934
Specialization: Architectural Engineering
Date and Place of Birth: 20 November 1894; Saragosa, Spain
Last Address: St. Xavier's College, Bombay, India
***Deceased:** 3 April 1967

Education: PhD.

Career: St. Xavier's College, Bombay: Principal and Prof. of Microbiology 28–41; postings at Barcelona, California, Fardham, Buenos Aires; Catholic Univ., Caracas: Professor.

Palaniandavar, Mallayan



Elected: 2004
Position: Co-ordinator, Centre for Bioinorganic Chemistry, Bharathidasan Univ., Tirucharapalli
Specialization: Bioinorganic Chemistry; Activation of Molecular Oxygen; Interaction of Metal Complexes with DNA
Date and Place of Birth: 5 June 1951; Koduvilarpatty, Tamil Nadu
Parents: Vairusamy Mallayan and Nagammal
Spouse and Children: P Sakuntala; one *s*, one *d* (Sundara, Ramya)
Address: School of Chemistry, Centre for Metals in Biology and Medicine,
Bharathidasan University, Tirucharapalli 620 024, India
Tel. (0431) 240 7053, (0431) 240 7125 (O), (0431) 245 7510 (R), Mobile: 94436 44758
email: palanim51@yahoo.com, palaniandavarm@gmail.com; URL: http://www.bdu.ac.in/indexeng.htm

Education: Madurai Kamaraj Univ.: BSc 71, MSc 73, PhD 81.

Career: MKU: Lecturer 73–82, Reader 82–86; Drexel Univ., USA: Instructor Postdoc 83–85; Bharathidasan Univ.: Prof. 86–, Head, School of Chem. 86–87, 2000–08, Dean, Faculty of Sci., Engg and Technol.; Chuo Univ., Japan: JSPS Vis. Prof. 93–94.

Scientific Work: Has made outstanding contributions to the understanding of structure and function of copper and iron proteins and DNA. Pioneering studies on Cu(II) and Ru(II) complexes bound to DNA. Made the `fascinating discovery' of left-handed Z-conformation in natural DNA bound to metal complexes. Established the role of ligands in determining the anticancer activity of certain Cu(II) and Ru(II) complexes. Constructed and studied structural and functional models for dioxygen-activating catechol dioxygenase, methane monooxygenase and galactose oxidase enzymes. Illustrated contribution of coordinated thioether and copper geometry to the facile electron transfer of blue proteins. Established relationship between redox potential and axial distortion in Cu(II) complexes. Significant contributions to structural bioinorganic chemistry include copper(II) complexes with axial Cu(II)-phenolate bond, uncommon see-saw stereochemistry, unusual facial coordination of a triaza ligand and simultaneous coordination of four cytosine molecules to copper(II) and rare five-coordinate iron(III) and trigonal planar copper(I) structural motifs.

Important Publications: (1) Copper(II) complexes of novel tripodal ligand containing phenolato and benzimidazole/pyridine pendants: Synthesis, structure, spectra and electrochemical behaviour (1994) *J. Chem. Soc. Dalton Trans.* 1219–1231. (2) Spectral and electrochemical behaviour of copper(II) phenanthrolines bound to calf thymus DNA. [Cu(5, 6-dmp)2]2+ (5, 6-dmp = 5, 6-dimethyl-1, 10-phenanthroline) induces conformational transition from B to Z DNA (1998) *Inorg. Chem.* **37**, 3927–3934. (3) Novel iron(III) complexes of tripodal ligands. Close relevance to intradiol cleaving catechol dioxygenase (2003) *Inorg. Chem.* **42**, 8283–8293. (4) Mixed ligand copper(II) phenolate complexes. Effect of coligand on enhanced DNA and protein binding, DNA cleavage, and anticancer activity (2007) *Inorg. Chem.* **46**, 8208. (5) Novel iron(III) complexes of sterically hindered 4N ligands. Regioselectivity in biomimetic extradiol cleavage of catechols (2008) *Inorg. Chem.* **47**, 6645.

Memberships: Member: American Chemical Soc. • Fellow: Royal Soc. of Chemistry.

Awards & Distinctions: Sankegowda Res. Award 95 • Tamil Nadu Scientist Award 97 • CRSI Bronze Medal 99 • UGC Research Award 99–2002 • DST Ramanna Fellow.

Palit, Dipak Kumar

Elected: 2007
Position: Sci. Offr, BARC, Mumbai
Specialization: Ultrafast Spectroscopy; Photo and Radiation Chemistry; Chemical Reaction Dynamics in Condensed Phase
Date and Place of Birth: 2 January 1957; Kadra, West Bengal
Parents: Ajit Kumar Palit and Renuka
Spouse and Children: Krishna; one s
Address: Radiation & Ultrafast Chemistry Section, Radiation & Photochemistry Division,
Bhabha Atomic Research Cehtre, Mumbai 400 085, India
Tel. (022) 2559 5091 (O), (022) 2557 1283 (R), Mobile: 99691 49589
email: dkpalit@barc.gov.in

Education: Burdwan Univ.: BSc Hons 77, MSc 79, Mumbai Univ.: PhD 89.

Career: BARC: Sci. Offr 83–; Head, Radiation & Ultrafast Chem. Sec.; Prof., Homi Bhabha Natl Inst. DAE, Mumbai.

Scientific Work: Excellent contributions in the field of ultrafast spectroscopy and chemical reaction dynamics by resolving the microscopic details of the very early events in high energy radiation and light-induced molecular processes in a variety of chemical systems. Indigenously developed some of the most sophisticated ultrafast spectrometers, which are one of their kind in India today and have provided the opportunity to elucidate the mechanism of elementary processes in complex molecular systems and to relate the dynamics and structures to functions in chemical systems at the most fundamental level. Contributed to understanding the dynamics of the fundamental photo-induced molecular processes in suitably synthesized model molecules, in which charge or electron transfer, proton transfer and energy transfer processes are strongly coupled to configurational relaxation, is likely to have a direct implication in controlling radiation and light-induced processes in photonics, solar energy storage devices as well as laser isotope enrichment processes. Another important contribution is investigation of excited state dynamics of intermolecular hydrogen bonded complexes in protic solvents to establish the role of hydrogen bond reorganization process in solvation. Presently, engaged in development of a time-resolved terahertz (far infrared region) spectrometer and an electron pulse pump – optical probe picosecond transient absorption spectrometer, which are in advanced stages of completion.

Important Publications: **(1)** Charge transfer induced twisting of the nitro group (2007) *J. Phys. Chem.* **A111**, 6122–6126. **(2)** Twisting dynamics in the excited singlet state of Michler's ketone (2006) *J. Phys. Chem.* **A110**, 3432–3446. **(3)** Ultrafast intermolecular hydrogen-bond dynamics in the excited state of fluorenone (2005) *J. Phys. Chem.* **A109**, 8693–8704. **(4)** Ultrafast intramolecular electronic energy transfer dynamics in a bichromophoric molecule (2004) *J. Phys. Chem.* **A108**, 7843–7852. **(5)** Photophysics and ultrafast relaxation dynamics in the excited states of dimethylaminobenzophenone (2004) *J. Phys. Chem.* **A108**, 2583–2597.

Memberships: Fellow: NASI 2006.

Awards & Distinctions: Indian Chem. Soc. Yeddanapalli Memorial Award 99 • CRSI Bronze Medal 2001 • Homi Bhabha S & T Award 2002.

Palit, Santi Ranjan*

Elected: 1974
Specialization: Physical Chemistry; Polymers
Date and Place of Birth: 24 March 1912; Kansaripara, Calcutta
Parents: Naranarayan Palit and Kusum Kumari
Spouse and Children: Ikon Basu; three s, two d
Last Address: Department of Physical Chemistry, Indian Association for the Cultivation of Science, Calcutta, India
***Deceased:** 13 September 1981

Education: Univ. of Calcutta: BSc Hons 31, MSc 33, PRS 40, DSc 42.

Career: Vidyasagar College, Calcutta: Lecturer 33–35; Lac Res. Inst., Ranchi: Res. Asst 38–45; Stanford Univ., USA: 45–46; Polytechnique Inst. of Brooklyn, USA: 46–47; IACS, Calcutta, Dept of Physical Chem.: Prof. and Head 47–76.

Scientific Work: Contributed widely to various areas of physical chemistry including thermodynamics of solutions, non-aqueous solvents, electrochemistry and polymer chemistry including kinetics of polymerization. Carried out extensive research on the physical chemistry of lacquers, varnishes and non-aqueous solutions of soaps and resin. Discovered that soap dissolves well in a mixture of glycol and hydrocarbon-dissolving solvent though it is almost insoluble in ether. Made quite comprehensive studies in solubilization and was among the few physical chemists who gave a modern twist to research in physical chemistry in the country.

Memberships: Fellow: INSA 53; NASI; London Royal Soc. of Chemistry • President: Chem. Sec of Indian Sci. Congress.

Panchapakesan, Natarajan

Elected: 1988
Specialization: General Relativity; Cosmology; Astro-Particle Physics
Date and Place of Birth: 15 March 1933; Calcutta
Parents: R Natarajan and Visalakshi
Spouse and Children: Margi's; one s (Sharad, deceased)
Address: K-110, Hauz Khas, New Delhi, 110 016, India
Tel. (011) 2656 1358 (R), Mobile: 98105 86446
email: panchu@bol.net.in, nargispanchu@gmail.com

Education: BSc Hons 52, MSc 54, PhD 66.

Career: IAS Offr 56–59. Univ. of Delhi: Res Fellow 54–55, Lecturer 59–65, Reader 68–83. Univ. of Chicago, USA: Fulbright Scholar 65–66, Res. Assoc. 66–67; Univ. of Wisconsin,Milwaukee, USA: Visiting Asst Prof. 67–68.

Scientific Work: Extended the concept of isobaric analog states to hypernuclei. Studied deSitter metric and the emission of Hawking radiation. Studied gamma ray trajectories and their emission from a rotating black hole. Calculated quasi- normal modes of black hole using Hill determinants. Studied emission of radiation by a pulsar, the motion of a photon in pulsar magnetosphere including formation of a psitronium and its photodisassociation. Electroweak baryogenesis and constraints on mass of Higgs particle. Gravitational lensing of galaxies, their implications for gamma ray bursts and dark energy. Study of change in phase transition from quantum tunnelling to thermal hopping.

Important Publications: **(1)** Nature of the decay eta to two gammas (1968) *Phys. Rev. Lett.* **20**, 945. **(2)** Gamma rays from rotating black holes (1984) *Astro. Phys. J.* **280**, 848. **(3)** Photon disassociation in strong magnetic fields and aplication to pulsars (1992) *Astro. Phys. J.* **388**, 131. **(4)** RG-improved bounds on Higgs boson and top quark masses from electroweak baryogenesis (1994) *Mod. Phys. Lett.* **A9**, 459. **(5)** Quantum tunnelling or thermal hopping? (2000) *Int. J. Mod. Phys.* **B14**, 2109.

Memberships: Indian Physical Soc., Astronomical Soc. of India, Indian Assn for General Relativity and Gravitation, India International Centre, New Delhi • President, Indian Assoc. for General Relativity and Gravitation 92–94.

Awards and Distinctions: Third Vaidya-Raychoudhury Endowment Lecturer 94.

Pancharatnam, Sivaramakrishna*

Elected: 1959
Specialization: Crystal Optics; Coherence of Radiation and its Resonant Interaction with Matter
Date and Place of Birth: 9 February 1934; Calcutta
Parents: S Sivaramakrishnan and Sitalaxmi
Spouse: Prema
Last Address: St. Catherine's College, 45, Portland Road, Oxford, UK
***Deceased:** 28 May 1969

Education: Univ. of Nagpur: BSc Hons 53, MSc 54, DSc 60.

Career: RRI, Bangalore: Res. Fellow 53; Univ. of Mysore: Reader 61–64; St. Catherine's College, UK: Res. Fellow 64–69.

Scientific Work: Experiments on crystal optics as a research student of C V Raman led to a deep study and generalization of the Poincaré sphere representation of polarized light and thereby to analysis of singular axis propagation, partial coherence in polarization and time, and the geometric phase, all of which represented novel and indeed unique contributions to what was regarded a closed area. At the Clarendon Laboratory, Oxford, carried out experiments on atomic vapours interacting with resonant radiation, including the first demonstration of a birefringence caused by alignment in a spin-one system. Analysis of light shifts in terms of classical dispersion theory and novel geometric representation of the states of a spin one system are two gems from this period.

Important Publications: **(1)** Partial polarization, partial coherence and their spectral description for polychromatic light (1963) *Proc. Indian Acad. Sci.* **A57**, I&II, 218–243.

Panda, Dulal

Elected: 2008
Position: Prof., IIT Bombay
Specialization: Biochemistry; Cell Biology; Biophysics
Date and Place of Birth: 28 January 1964; Kui Town, West Bengal
Parents: Satya Rajan Panda and Shova Rani
Spouse and Children: Sima Rani; two s
Address: School of Biosciences & Bioengineering, Indian Institute of Technology, Mumbai 400 076, India
Tel. (022) 2576 7838 (O), (022) 2572 0281 (R), Mobile: 98203 91591
email: panda@iitb.ac.in

Education: Calcutta Univ.: BSc 84, MSc 86; Jadavpur University: PhD 94.

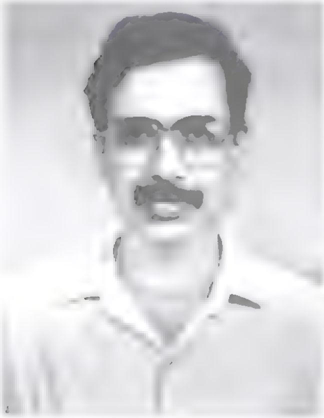
Career: Univ. of California: Postdoc Fellow 93–98, Asst Res. Biologist 98–2000; IIT Bombay: Asst Prof. 2000–03 Assoc. Prof. 2003–07, Prof. 2007–.

Scientific Work: Contributed immensely in understanding the mechanism of regulation of microtubule dynamics and the molecular mechanism of action of microtubule-targetted anticancer drugs. Presented evidence suggesting that microtubule assembly dynamics are tightly regulated in cells and the suppression of the dynamics by anti-tubulin agents leads to cell death. Also discovered several new tubulin-targetted antiproliferative agents having potent activity against tumour cells. In addition, contributed greatly in understanding the role of FtsZ assembly dynamics in bacterial cell division. Provided data suggesting that FtsZ and tubulin polymerize by different molecular mechanisms. Has reconstituted FtsZ protofilaments *in vitro* and used the system to screen novel antibacterial drugs. Showed that the assembly dynamics of FtsZ is an important antibacterial drug target and also discovered lead antibacterial agents that inhibit bacterial division by targetting FtsZ.

Memberships: Guha Res. Conf.

Awards & Distinctions: Swarnajayanthi Fellowship 2003–04 • National Bioscience Award • P S Sarma Memorial Award.

Panda, Subrat Kumar



Elected: 1995
Position: Prof., Dept. of Pathology, AIIMS, New Delhi
Specialization: Liver Pathology; Viral Hepatitis; Molecular Biology/Virology
Date and Place of Birth: 18 November 1954; Calcutta, West Bengal
Parents: Srikant Panda and Shashipriya
Spouse and Children: Gita Satpathy; one *s* (Aurojit)
Address: Department of Pathology, All India Institute of Medical Sciences,
Ansari Nagar, New Delhi 110 029, India
Tel. (011) 2659 4924, 2659 3493 (O), (011) 2658 8915, 2658 8916 (R), Mobile: 98104 77583
email: pandask@hotmail.com, subrat@gmail.com

Education: Utkal Univ.: MBBS 78; AIIMS: MD 81.

Career: AIIMS: Jr Resident 79–81, Sr Resident 82–85, Lecturer 85–86, Asst Prof. 86–88, Assoc. Prof. 88–92, Addl Prof. 92– 96, Prof. 96–2005, Head 2005–.

Scientific Work: Developed animal model for viral hepatitis E. Cloned the Indian strain of the virus, expressed all the structural and non-structural proteins, developed diagnostic ELISA. Involved in study of viral pathogenecity and vaccine for prevention. Identified receptor for HBV and an 'S' transactivator associated with majority of hepatocellular carcinoma. Associated with extensive epidemiological studies of Hepatitis B virus infection in India. Cloned and sequenced major parts of HCV. Identified a new subtype (III C) from India. Cloned and sequenced Indian strain of duck hepatitis B virus. Developed animal model for anti Hepadna virus drug testing. Developed infections replicon for HEV. Identified 3' cis acting elements and demonstrated subcellular site of HEV replication. Described mutant HBV causing occult infection in India and the biology of such mutant HBV.

Important Pulications: **(1)** Subcellular localization of hepatitis E virus (HEV) (2008) *Replicase. Virol.* **370**, 77–92 **(2)** Occult hepatitis B virus infection in chronic liver disease: full-length genome and analysis of mutant surface promoter (2004) *Gastroenterol.* **127**, 1356–1371 **(3)** The in vitro synthesized RNA from a cDNA clone of Hepatitis E virus (HEV) is infectious (2000) *J. Virol.* **74**, 2430–2437 **(4)** Genotype determination of hepatitis C virus from northern India. Identification of a new sub type (1996) *J. Med. Virol.* **48**, 191–198 **(5)** Enterically transmitted non-A, non-B hepatitis. Recovery of virus likes particle from an epidemic in South Delhi and transmission studies in Rhesus monkey (1989) *Hepatol.* **10**, 466–472.

Awards & Distinctions: S S Bhatnagar Prize 95 • Ranbaxy Science Foundation Award 97• Member: Editorial Board of the Indian J. Med. Res. 2004 • Orissa Bigyan Acad. Samanta Chandra Sekhar Prize 2004 • DST J C Bose National Fellowship 2007.

Pandalai, Krishnan Aditya Varman*

Elected: 1974
Specialization: Aircraft Structural Mechanics; Composite Materials and Structures
Date and Place of Birth: 16 February 1928; Jamshedpur, Bihar
Parents: K Sankunni Pandalai and Lakshmikutty Kovilamma
Spouse and Children: Shantha; one s, one d
Last Address: 77/2, Velachery Road, Gul Mohar Avenue, Madras 600 032, India
***Deceased:** 20 May 1999

Education: Madras Univ.: BA 47; Polytechnic Inst. of Brooklyn, USA: ME 50, DAeE 55.

Career: Polytechnic Inst. of Brooklyn, USA, Dept of Applied Mechanics & Aeronautical Engg: Jr and Sr Grade Res. Fellow 50–55, Asst Prof. 57–59; Madras Inst. of Technol., Dept of Aeronautical Engg: Asst Prof. 55–57, Prof. & Head 60–67; David Taylor Model Basin, US Navy Dept, USA, Applied Dynamics Dn: Physicist 58–59; IIT Bombay, Dept of Mechanical Engg: Asst Prof. 59–60; Stanford Univ., USA, Dept of Aeronautics & Astronautics: Vis. Prof. 65–66; IIT Madras, Dept of Applied Mechanics: Sr Prof. 67–69, Head of Dept of Aeronautical Engg 69–73, Dean of Admn. 73, Dir 73–77.

Scientific Work: Contributed to the areas of thermal stress analysis, creep analysis, nonlinear analysis of beams, rings, plates and shells and composite structures. Analytically established that the large amplitude vibration of straight beams and flat plates of any platform, and having any set of boundary conditions always leads to the hardening type of nonlinearity in the case of geometric nonlinearity. Contributed to the design and analysis of the heatshield of AGNI missile of DRDO.

Memberships: Fellow: Aeronautical Soc. of India; Royal Aeronautical Soc.

Awards & Distinctions: CSIR Silver Jubilee Award 71 • NRDC Award 91.

Pandey, Dhananjai

Elected: 2000
Position: Prof., BHU, Varanasi
Specialization: Condensed Matter Physics; Materials Science; Crystallography; Structural Phase Transitions; Ferroics and Multiferroics
Date and Place of Birth: 24 March 1952; Ballia, Uttar Pradesh
Parents: S K Pandey and Saraswati
Address: School of Materials Science and Technology, Institute of Technology, Banaras Hindu University, Varanasi 221005, India, H-7, VDA Flats, Ravindrapuri Extension, Varanasi 221005, India
Tel. (0542) 236 8707 (O), (0542) 231 4658 (R), Mobile: 94158 12424
email: dpandey@bhu.ac.in, dpandey_bhu@yahoo.co.in

Education: Gorakhpur Univ.: BSc 70, BHU: MSc 72, PhD 76.

Career: BHU: Lecturer in Phys. 77–79, Lecturer in Materials Sc. 79–84, Reader in Materials Sc. 84–97, Prof. of Phys. 97–98, Prof. of Materials Sc. 98– ; Coordinator of School of Materials Sc. and Technol. 96–97, 98–2007; IUC-DAEF (now called UGC-DAE CSR) Mumbai: Centre Dir 94–95.

Scientific Work: Faulted matrix model for the origin of polytypism, discovery of a long range ordered phase without any short range correlations, mechanism of phase transitions in SiC, discovery of three monoclinic phases in the PZT and PMN-xPT ceramics and revision of their phase diagrams, atomic level evidence of intrinsic multiferroic coupling in $BiFeO_3$-$BaTiO_3$, PFN-xPT and BF-xPT.

Important Publications: **(1)** Direct evidence for multiferroic magnetoelectric coupling in 0.9 $BiFeO_3$–0.1 $BaTiO_3$ (2008) *Phys. Rev. Lett.* **101**, 24, 247602. **(2)** Evidence for Mb and Mc phases in the morphotropic phase boundary region of $[(1-x)[Pb(Mg_{1/3}Nb_{2/3})O_3]-xPbTiO_3$: A Rietveld study (2003) *Phys. Rev.* **B67**, 064102. **(3)** Evidence for another low-temperature phase transition in tetragonal $Pb(Zr_xTi_{1-x})O_3$ ($x = 0.515, 0.520$) (2001) *Phys. Rev.* **B64**, 054101. **(4)** Novel features of $Sr_{1-x}Ca_xTiO_3$ phase diagram: Evidence for competing antiferroelectric and ferroelectric interactions (2000) *Phys. Rev. Lett.* **84**, 3726. **(5)** Long range ordered phases without short range correlations (1988) *Phys. Rev. Lett.* **61**, 1493.

Memberships: Fellow: INSA 2004 • Member: APAM; Commission on Aperiodic Crystals 93–2002; Working Group on Phase Transitions Nomenclature 99; Commission on Journals 96–2008; Commission on Inorganic and Mineral Structures of International Union of Crystallography 2005–11.

Awards & Distinctions: CNR Rao Education Foundation Award for Excellence in Scientific Research • ICSCA Platinum Jubilee Award Lecture in Physical Sciences • DAE Raja Ramanna Award Lecture in Physics • ICSC-MRSI Annual Prize • MRSI Medal • Homi Bhabha Fellowship • INSA Young Scientist Medal.

Pandey, Ganesh Prasad

Elected: 1993
Position: Dy Dir and Head, Dn of Organic Chemistry, NCL, Pune
Specialization: Organic Synthesis; Organic Photochemistry
Date and Place of Birth: 5 July 1954; Varanasi, Uttar Pradesh
Parents: Shyam Nath Pandey and Jaya Raji
Spouse and Children: Neelima; one *s*, two *d*
Address: Division of Organic Chemistry, National Chemical Laboratory, Pune 411 008, India
Tel. (020) 2590 2627 (020) 2590 2760 (O), (020) 2588 3493 (R), Mobile: 99701 71802
email: gp.pandey@ncl.res.in

Education: Univ. of Agra: BSc 73, MSc 75; BHU: PhD 79.

Career: Purdue Univ., USA, Chem. Dept: Res. Assoc. 80–83; Panjab Univ., Chandigarh: CSIR Pool Offr 83–84; IICT, Hyderabad, Organic Dn: Sci. 84–91; NCL, Pune, Org. Dn: Sci. 91–.

Scientific Work: Generation and application of radical ions have been the subject of research interest over the years. Extensive investigations, leading to the new synthetic methodologies from a variety of substrates by photo induced electron transfer (PET), have been developed. Several natural products have been synthesized utilizing these methodologies. Work involves harvesting of electrons from visible light photons and its utilization to initiate one electron redox reactions in organic synthesis. Introduced various applications of newer methodologies for total synthesis of natural products.

Memberships: Fellow: NASI 93; Maharashtra Acad. of Sci.

Awards & Distinctions: CSIR Young Scientist Award 88 • Birla Science Prize 90.

Pandey, Prem Chand

Elected: 1997
Position: Emeritus Prof., IIT Kharagpur
Specialization: Satellite Oceanography; Atmospheric Sciences; Climate Change; Polar Research
Date and Place of Birth: 10 August 1945; Ramapur, Uttar Pradesh
Parents: Subhash Chand Pandey and Suraj Devi
Spouse and Children: Savita Rani; one *d* (Nidhi)
Address: CORAL, Indian Institute of Technology, Kharagpur 721 302, India
Tel. (03222) 28 1780 (O), (03222) 28 1781 (R), Mobile: 94347 09797
email: pcpandey45@yahoo.co.in

Education: Allahabad Univ.: BSc 63, MSc 66, PhD 72.

Career: DAV Degree College, Azamgarh: Lecturer 66–67; Allahabad Univ.: Res. Scholar 67–72; Central Water and Power Res. Station, Pune: Res. Offr 73–77; Space Applications Centre, Ahmedabad. Sci. 77–92, Head, Sci. 92–97, JPL, USA NASA/NRC Sr Resident Res. Assoc. 80–83, 87–89; Natl Centre for Antarctic and Ocean Res., Goa, Dir 97–2005, CORAL, IIT Kharagpur: Vis./Emeritus Prof., 2005–.

Scientific Work: Made outstanding contributions in satellite data retrieval and its applications to ocean, atmosphere, Antarctic Sea ice and climate studies. Initiated satellite borne radiometry research in India and laid the foundation for advanced research at SAC/ISRO. Established National Centre for Antarctic and Ocean Research at Goa, K Banerjee Centre for Ocean and Atmosphere Studies at Allahabad, and played key role in establishing a Centre for Oceans, Rivers, Atmosphere and Land Sciences (CORAL) at IIT Kharagpur, and Oceanic Sciences Division at Space Applications Centre, Ahmedabad.

Important Publications: **(1)** Tsunami travel time predictions using neural networks (2006) *Geophys. Res. Lett.* **33**, L16612. **(2)** Seasonal variability of QSCAT-derived wind stress over the southern ocean (2004) *Geophys. Res. Lett.* **31**, L13304. **(3)** An algorithm for retrieving vertical wind profiles from satellite observed winds over the Indian ocean using complex EOF analysis (1996) *J. Appl. Met.* **35**, 4, 532–540. **(4)** Measurements of global oceanic winds from SEASAT SMMR and its comparison with measurements from Seasat SASS and ALT derived winds (1987) *IEEE Trans Geosci. Remote Sensing*, GE-25, **6**, 670–676. **(5)** An algorithm for the retrieval of oceanic wind vectors from the simulated SASS normalised radar cross section measurements (1985) *J. Geophys. Res.* **90**, C4, 7307–11.

Memberships: Fellow, IGU, IMS, GST, ESI, ISRS, NASI 91 • Member: Academic Council, Goa Univ. • Chmn. NASI: Kharagpur Chapter NCAOR Review Committee set up by MoESh.

Awards & Distinctions: S S Bhatnagar Award • Hari Om Ashram Prerit Vikram Sarabhai Award & Gold Medal • NASA Certificate of Recognition • Om Prakash Bhasin Award • Vigyan Ratna Samman Award of UP Council of S and T • K R Ramanathan Memorial Gold Medal from IGU • Khosla National Award, IIT Roorkee • DSc (hc) from Purvanchal Univ., Jaunpur.

Pandian, Thavamani Jegajothivel

Elected: 1985
Specialization: Genetics and energetics; Aquaculture
Date and Place of Birth: 15 June 1939; Palamedu, Tamil Nadu
Parents: K Thavamani and Valliammal
Spouse and Children: Shanthakumari; one s (Sathish Kinne)
Address: 9, Old Natham Road, Opposite Balamandiram, Madurai 625 014, India
Tel. (0452) 264 0139 (R) Mobile: 098421 64130
email: tjpandian@rediffmail.com

Education: Univ. of Madras: BSc 60, MSc 62, PhD 65; Kiel Universitat, Germany: Dr. rer. nat. 68.

Career: Bangalore Univ., Dept of Zoology: Lecturer 68–71; Madurai Kamaraj Univ., School of Biological Sci.: Reader 71–78, Prof. 78–94, Sr Prof. 94–96, UGC Natl Lecturer 85–86, Natl Fellow 89–91, Natl Prof. 91–

Scientific Work: Developed models to predict food intake and growth and/or digestive efficiency of selected fishes, prawns, frogs and insects from easily and quickly measurable indices. Interested in fish breeding and genetics of fish, by undertaking long term planned endocrine reversal and ploidy induction studies, produced several new strains such as allo and autotriploids, meiotic and mitotic gynogens, supermales (YY) and superfemales (YY) in many fishes. First group to produce transgenic fish. Restored the genome of fishes using their preserved/cadaveric sperm and genome-inactivated eggs of other alien but compatible fishes.

Important Publications: **(1)** Intake, digestion, absorption and convers of food in the fishes *Megalops cyprinides and Ophiocaphalus striatin* (1967) *Mar. Biol.* **1**, 16–32. **(2)** *Animal energetics* (1987) Academic Press, San Diego, USA **1**, p.542; **2**, p.631 **(3)** Ploidy induction and sex control in fish (1998) *Hydrobiologia* **384**, 167–243. **(4)** Interspecific androgenetic restoration of rosy barb using cadaveric sperm (2004) *Genome* **47**, 66–73. **(5)** Cadaveric sperm induces intergeneric androgenesis in the fish *Hemigrammi caudovittatus* (2006) *Theriogenol.* **65**, 1048–1070.

Memberships: Fellow: NASI 84; INSA 87; NAAS 93; TWAS 99.

Awards & Distinctions: IARI Hooker Award 78 • S S Bhatnagar Award 84 • Naga Award, Philippines 91.

Pandit, Aniruddha Bhalachandra

Elected 2008
Position: UGC Res. Sci, Univ. of Mumbai
Specialization: Design of Multiphase Reactors; Cavitation Phenomena; Environmental Engineering
Date and Place of Birth: 7 December 1957; Mumbai, Maharashtra
Parents: Bhalchandra R Pandit and Sumati S
Spouse and Children: Amala; one *d*
Address: Institute of Chemical Technology, University of Mumbai,
N P Marg, Matunga, Mumbai 400 019, India
Tel. (022) 2414 5616 (ext 2017) (O), (022) 2430 2660 (R), Mobile: 98204 08037
email: dr.pandit@gmail.com; URL: www.udct.org

Education: Institute of Tech, BHU: BTech 80; Univ. of Mumbai: PhD 84.

Career: Univ. of Mumbai, Dept. of Chem. Technol.: Assoc. Lecturer 82–84, UGC Res. Sci. 91–; Univ. of Cambridge: Res. Assoc. 84–90.

Scientific Work: Has been singularly responsible in proposing, promoting and applying the phenomena of cavitation for intensification of physical and chemical processing applications. Over the past 15 years, has successfully exploited the cavitation phenomena for a variety of operations such as crystallization, emulsification, nano-particle synthesis and processes such as esterification, oxidation, etc. Work on microbial cell disruption for water disinfection has been recognized by International Maritime Organization (IMO) as a most probable technique for ballast water treatment among other seven developed by the scientists in Japan, Germany, USA etc. Explanation of anomalous behaviour and the development of performance correlations have resulted in focussed design methods and criteria for the design of the commonly used multiphase contactors and some novel cavitational reactors. Has got 4 international patents on some of these processes and most importantly some have even been employed in the industry and are in successful commercial operation.

Important Publications: **(1)** *Cavitation reaction engineering* (1999) Plenum Publishers, USA. **(2)** *Chemical engineering science* (1983) **38**, 1189. **(3)** *Ultrasonics sonochemistry* (1998) **5**, 53. **(4)** *AIChE J.* (2000) **46**, 372. **(5)** *Advances in Environmental Research* (2004) **8**, 501.

Memberships: Fellow: INAE 2007; NASI 2008; INSA 2009; Maharashtra Acad. of Sci.

Awards & Distinctions: ISTE National Award for Outstanding Research 94 • VASVIK Award 96 • II ChE Herdillia Award for Basic Research 2001.

Pandit, Lalit Kumar*

Elected: 1976
Specialization: Theoretical High Energy Physics
Date and Place of Birth: 28 June 1932; Shimla, Himachal Pradesh
Parents: Pandit Chandu Lal and Kalavati
Spouse and Children: Neeraja; two s, one d
Last Address: F-32, Green Park, New Delhi 110 016, India
***Deceased:** 23 May 2006

Education: Delhi Univ.: BSc Hons 51, MSc 53; Univ. of Zurich, Switzerland: DPhil 57.

Career: TIFR, Bombay: Res. Fellow, Reader, Assoc. Prof., Prof. 58–92.

Scientific Work: Studied meson theory, symmetries of strong and weak interactions, current algebra, unified gauge theories of weak and electromagnetic interactions. Contributed significantly to the current algebra approach to elementary particle physics. Investigations on kaon semileptonic decays (known as CT-MOP relation), the strangeness changing axial-vector coupling constants etc are widely referred in literature. Work on field algebra leading to calculation of phi-meson decay to kaon-antikaon is also noteworthy. Investigation of the Clebsch–Gordon coefficients of the SU(3) group also helped in the application of the symmetry approach to particle physics.

Pandit, Rahul

Elected: 1996
Position: Prof., IISc, Bangalore
Specialization: Statistical Mechanics of Phase Transitions; Condensed Matter Theory; Spatiotemporal Chaos; Turbulence
Date and Place of Birth: 22 April 1956; New Delhi
Parents: Chandra Shekhar Pandit and Bina
Spouse and Children: Shobha Raghuram; one d (Mrinalika)
Address: Department of Physics, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2293 2863, (080) 2293 2249 (O), (080) 2664 7689 (R), Mobile: 98452 30684
email: rahul@physics.iisc.ernet.in; URL: http://physics.iisc.ernet.in/~rahul

Education: IIT Delhi: MS 77; Univ. of Illinois, USA: MS 79, PhD 82.

Career: Cornell Univ., USA: Postdoc Assoc. 81–83; IISc: RA 84, UGC Res. Sci. 85–90, Asst Prof. 90–96, Assoc. Prof. 96–2002; Prof. 2002–, Physical and Mathematical Sci. Dn: Chmn 2008–date; Ohio State Univ., USA: Vis. Asst Prof. 86, 87, 88, 89, 90, 93; Univ. of Missouri USA: Vis. Scholar 95; Observatoire de la Cote d Azur, Nice, France: Vis. Sci. 2001, 2002, 2003, 2005, 2006, 2007.

Scientific Work: Carried out research in a wide variety of areas in condensed-matter theory including: turbulence–statistical properties of fluid, passive-scalar, magnetohydrodynamic, and Burgers turbulence, drag reduction; spatiotemporal chaos in extended, deterministic dynamical systems, e.g., models for cardiac tissue (to understand life threatening arrhythmias like ventricular fibrillation); statistical mechanics of quantum antiferromagnets, models for the colossal magnetoresistive manganites, other correlated electron models (e.g., the Hubbard and extended-Hubbard models); superfluid, Mott-insulator, and other phases in systems of interacting bosons on a lattice; complex fluids–microemulsion, micellar, lamellar, and sponge phases in oil-water-surfactant mixtures and bilayer systems, and semiflexible, living and equilibrium polymers; kinetics of first-order phase transitions, including hysteresis and domain growth; nonequilibrium statistical steady states in driven, many-body systems; statistical mechanics of systems with surfaces, interfaces, and membranes including wetting, roughening, and surface melting.

Important Publications: **(1)** Systematics of multilayer adsorption phenomena on attractive substrates (1982) *Phys. Rev.* **B26**, 5112. **(2)** One-dimensional Schrödinger equation with an almost periodic potential (1983) *Phys. Rev. Lett.* **50**, 1873. **(3)** Magnetic hysteresis in two model spin systems (1990) *Phys. Rev.* **B42**, 856. **(4)** Superfluid and insulating phases in an interacting boson model: Mean-field theory and the RPA (1993) *Europhys. Lett.* **22**, 257. **(5)** The universality of dynamic multiscaling in homogeneous, isotropic Navier–Stokes and passive-scalar turbulence (2008) *New J. Phys.* **10**, 033003.

Memberships: Member: Sigma Xi; Phi Kappa Phi • Fellow: INSA 2006.

Awards & Distinctions: IASc Assoc. 87–91 • INSA Young Scientist Medal 88 • S S Bhatnagar Award 2001 • Meghnad Saha Award 2004 • J C Bose Fellow 2007.

Pandit, S R*

Elected: 1934
Date of Birth: 1893
Last Address: Guru Kripa, Higgins Road, Ootacamund, Nilgiris
***Deceased:** 23 December 1977

Education: MBBS; Univ. of Madras: BSc; Univ. of London: DB.

Career: The King Inst., Madras: Asst Dir; Pasteur Inst., Shillong: Dir.

Pandita, Pran Nath

Elected: 2005
Position: Prof., NE Hill Univ., Shillong
Specialization: Theoretical High Energy Physics; Astroparticle Physics
Date and Place of Birth: 1 January 1949; Srinagar, Jammu and Kashmir
Parents: Sona Ram Pandita and Arundhati
Spouse and Children: Kishni Kumari; one *d*
Address: Department of Physics, North-Eastern Hill University,
Mawkynroh-Umshing, Shillong 793 022, India
Tel. (0364) 272 2823 (O), (0364) 255 0090 (R)
email: pandita@sancharnet.in

Education: Kashmir Univ.: BSc 68, MSc 70, PhD 75.

Career: North Eastern Hill Univ.: Lecturer 79–85; Alexander Von Humboldt Fellow 83.; Kashmir Univ.: Sr Fellow 75–77, TIFR: Vis. Fellow 77–79; Univ. Dortmund, Germany: Humboldt Fellow 83–84; North Eastern Hill Univ.: Reader 85–98, Prof. 98–.

Scientific Work: Research interests lie in field theory and particle physics, with emphasis on supersymmetry, supergravity and supersymmetric grand unified theories and their phenomenological implications. Broadly, research focussed on mechanism of supersymmetry breaking, baryon and lepton number violation in supersymmetry, and Higgs physics. In the area of supersymmetry breaking, looked at the distinctive signatures of gravity-mediated and anomaly-mediated supersymmetry breaking models. In particular, derived relations between squark and slepton masses which can help distinguish between the gravity and anomaly-mediated supersymmetry breaking models. Supersymmetric models invariably have renormalizable baryon and lepton number violating Yukawa couplings. Carried out extensive analysis of infra-red fixed points of these baryon and lepton number violating couplings of the minimal supersymmetric standard model as well as its extensions. Under certain assumptions, showed that only the baryon number violating coupling of the third generation approaches a non-trivial fixed point, whereas all other non-trivial fixed point solutions are either unphysical or unstable in the infra-red region. Phenomenological implications of this result have also been considered. In the area of Higgs physics, research centred around the mass of the lightest Higgs boson and its production at the colliders. In particular, studied the extended Higgs sectors in low energy supersymmetric models. Investigations of Higgs sector in extended supersymmetric models carried established the existence of an upper bound on the mass of the lightest Higgs boson in these models. Also involved in the investigation of the possibility of measuring the Higgs self - couplings in the MSSM at a $e^+ e^-$ collider with a view to theoretically reconstruct the Higgs potential. Carrying out detailed analysis of Higgs self couplings of the MSSM as well as NMSSM with CP-violation, and the implications for the measurement of these couplings at $e^+ e^-$ colliders.

Memberships: Fellow: INSA 2009.

Awards & Distinctions: UGC India Research Award 97 • ICTP Sr Assoc. 2001.

Pandya, Kantilal Chhaganlal*

Elected: 1934
Specialization: Organic Chemistry
Date and Place of Birth: 24 August 1886; Nadiad, Gujarat
Parents: Pandya Chhaganlal and Samarthlakshmi
Spouse and Children: Umanglakshmi; three d
Last Address: 1, Ambe Bhuvan, 24th Road, near Raheja Construction House (A), Khar, Bombay 400 052, India
***Deceased:** 14 October 1958

Education: Univ. of Bombay: BA 1907, MA 10; London Univ.: DIC 21, PhD 23.

Career: St. Johns College, Agra, Dept of Chem.: Asst Lecturer 13–16, Prof. and Head 16–24, Prof. and Head of Sci. Dept 24–47, Prof. Emeritus 47–50; Agra Univ.: Dean of Sci. Faculty 29.

Scientific Work: Prepared seventy unknown alpha, beta-unsaturated acids and twenty five substituted aldehydes employing modifications. Observed that though ketones react in a sluggish manner, amides react in a facile manner in presence of pyridine. Investigated the reaction employing acetoacetic ester in place of malonic acid. Synthesised quite a few new substituted coumarins and aminocoumarins. Developed interest in the chemicals inside certain food items – dried imli, kokam and unripe mango. Quantified the amount of tartaric acid, citric acid as well as oxalic acid. Content of glucose and certain minerals could also be established.

Pandya, Sudhir Pradyumna

Elected: 1974
Specialization: Nuclear Physics
Date and Place of Birth: 11 July 1928; Nadiad, Gujarat
Parents: Pradyumna A Pandya and Sulochana
Spouse and Children: Harshida; two s (Abhijit, Pravir)
Address: 26, Mithila Society, opp. Shreyas School, Ahmedabrad 380 015
Tel. (079) 2661 1590 (R)
email: sudhir.pandya@yahoo.com

Education: Univ. of Bombay: BSc 48; Univ. of Delhi: MSc 50; Univ. of Rochester, USA: PhD 56.

Career: Delhi Univ., Dept of Atomic Energy: Res. Fellow 50–53; Univ. of Rochester, USA: Res. Asst 53–56; Physical Res. Lab., Ahmedabad: Reader 57–62, Assoc. Prof. 62–69, Prof. 69–73, Dy Dir 73–82, Sr Prof. 79–88, Dir 83–87; Intl Centre for Theoretical Phys, Italy: Assoc. 67–70; INSA: Sr Sci. 89–91; CSIR: Emeritus Sci. 92–93.

Scientific Work: Worked in meson physics and nucleon–nucleon scattering. Discovered in the nuclear shell model, a theorem relating the spectrum of two-particle configuration with that of a particle-hole configuration, which provided the first estimates of the strength of three-body forces in nuclei. Made extensive applications of shell model and statistical spectroscopic technique to nuclei in s-d and p-f-g shells. Developed the technology of Hartree–Fock methods to include configuration-mixing effects and applied it to study nuclei far from stability in A = 70–90 region. Provided clear physical insights into the microscopic structure of nuclei and its role in explaining a variety of exotic, unexpected effects, e.g. superdeformed ground state of Zr 80.

Memberships: Fellow: INSA 86 • President: Indian Phys. Assn 73–75; Gujarat Sc. Acad. 80–82.

Awards & Distinctions: Vikram Sarabhai Award 94.

Panikkar, Nedumangattu Kesava*

Elected: 1945
Specialization: Zoology
Date and Place of Birth: 17 May 1913; Kottayam, Kerala
Parents: Sankunni Menon and Janaki Amma
Spouse and Children: Parukutty Amma; one s, one d
Last Address: Lalit Nivas, Miramar, Panaji, Goa, India
***Deceased:** 24 June 1977

Education: Univ. of Madras: BA Hons 33, MA 35, DSc 38.

Career: Univ. of London and Cambridge and Marine Biology Laboratory, Plymouth 38–43; Univ. College of Trivandrum: Prof. and Head of Zoology 43–44; Univ. of Madras: Dir of Zoological Laboratory 44–46; Ministry of Food and Agriculture: Offr on Special Duty 46–51; CMFRI, Mandapam: Dir 51–57; Govt of India: Fisheries Development Adviser 57–62; Intl Ocean Expedition: Dir of Indian Programme 62–66; Natl Inst. of Oceanography: Dir 66–73; Univ. of Cochin: Vice-Chancellor 74–77.

Scientific Work: Work on the breeding of brackish water animals of the Adyar Estuary was a new approach to the problem of environmental adaptation. Did classical work on the osmoregulation in prawns. Research interests have been as varied as the positions occupied and contribution to the development of Indian marine sciences, such as fisheries and oceanography has been immense.

Memberships: Member: National Commission on Agriculture 73–74 • Fellow: INSA 52; Zoological Soc. of India; London Royal Soc. of Arts 50; Indian Geophysical Union 64.

Awards & Distinctions: Galathea Medal of Denmark 53 • Sir Dorabji Tata Medal 61–63 • Chandrakala Hora Medal 71 • Padma Shri 73.

Panse, Vinayak Govind*

Elected: 1947
Specialization: Statistics, Genetics; Plant Breeding; Agronomy
Date and Place of Birth: 11 January 1906; Nasik, Maharashtra
Last Address: ICAR, Statistical Wing, Library Avenue, New Delhi, India
***Deceased:** 22 July 1969

Education: Univ. of Bombay: BSc 27; Univ. of London: PhD 40.

Career: Institute of Plant Industry, Indore: 27–40, Dy Dir 46–51; Indian Central Cotton Ltd: Statistician 40–46; ICAR, Delhi: Statistical Adv. and Head 51–66; FAO, UN: Regional Adviser for Agri. Census in Asia and Far East 60–61.

Scientific Work: Originator of two well-known statistical methods: Progenyrous technique and the method of quantifiable inheritance. Was the first to demand the application of the random sampling method for estimation of yield. Responsible for developing several statistical methods in plant breeding. Extended the application of sampling techniques to a number of other fields such as cost of production studies, estimation of catch of fish, estimation of livestock and their products and evaluation of the intensive agricultural district programme.

Memberships: Fellow: INSA 44.

Pant, Devi Datt*

Elected: 1970
Specialization: Molecular Spectroscopy; Luminescence; Non-Radiation Process
Date and Place of Birth: 14 August 1919; Deorari, Pithoragar, Uttar Pradesh
Parents: L D Pant and Bhagirathi
Spouse and Children: Pushpa; two *s*, four *d*
Last Address: Department of Physics, Kumaun University, Nainital 263 002, India
***Deceased:** 11 June 2008

Education: BHU, Varanasi: BSc 40, MSc 42, DSc 49.

Career: IISc, Bangalore: 42–44; DSB College, Nainital: Prof. of Phys. 44–63, Principal 63–71; Dir of Education, UP: 71–72; SBSH, Pantnagar Univ.: Dean of Sci. 73–74; Kumaun Univ., Nainital: Vice-Chancellor 74–78, Prof. Emeritus 79; Univ. of Roorkee: UGC Retired Teacher 78–79.

Scientific Work: First investigations dealt with photoconductivity of diamond and luminescence spectra and vibrations in crystal lattices. Later, undertook an intensive study of the spectra of uranyl salts. Was the first to suggest that in fluorescence the excited uranyl ion loses all its vibrational energy and emits only from the zero vibrational state of the excited electronic state, a result which led to the correct analysis of a large number of uranyl spectra. Was the first to postulate that radiationless transfer under certain conditions, particularly in crystals, takes place in multiple photons.

Memberships: Fellow: Sigma Xi.

Awards & Distinctions: Agra Univ. Res. Award 67 • Kumaun Univ.: DSc h c 78 • Raman Centenary Medal 88.

Pant, Divya Darshan*

Elected: 1968
Specialization: Botany; Plant Animal Interactions including Morphology; Reproductive Biology of Living and Fossil Plants
Date and Place of Birth: 18 October 1919; Ranikhet, Uttar Pradesh
Parents: Ambika Datt Pant and Maina Devi
Spouse and Children: Radha; one *s*, two *d* (Priya Darshan, Vijaya, Kusum)
Last Address: 106, Tagore Town, Allahabad 211 002, India
***Deceased:** 9 May 2001

Education: Lucknow Univ.: BSc 39, MSc 41; Allahabad Univ.: DPhil 50.

Career: Lucknow Univ., Dept of Botany: Student Demonstrator 41; Allahabad Univ., Dept of Botany: Lecturer 45, Reader 64, Prof., Sr Prof., Dean of Faculty 66; INSA Sr and Hon. Sci. 88–2001.

Scientific Work: Provided new concepts about gametophytic nature of *Rhynia gwynne* vaghanii; nature of primitive node and new nodal types; the evolution of coniferous cone; evolution of fern annulus; origin of *Glossopteris* flora contemporaneously with the palaeozoic ice age; structure, reconstruction and reproduction of glossopterids; formation of asymmetrical fossil compressions. Researches extended into morphotaxonomy, anatomy, reproductive biology, pollination ecology, and palynology of plants starting from bryophytes through pteridophytes and gymnosperms to angiosperms. The classification of stomata based on their ontogeny is a classic. Also contributed to the classification of gymnosperms, fossil spores and pollen. Earned worldwide recognition for the comprehensive and authoritative work on the living and fossil cycads.

Important Publications: **(1)** *An introduction to gymnosperms, cycas and cycadales* (2002) BSIP, Lucknow. **(2)** *Studies in gymnospermous plants, cycas* (1962) Central Book Depot, Allahabad. **(3)** *Cycas and cycadales* (1973) Central Book Depot, Allahabad.

Memberships: Fellow: INSA 72; NASI; London Linnean Soc.; Indian Botanical Soc.; Palaeobotanical Soc.

Awards & Distinctions: INSA T S Sadasivan Lecture Award 90 • Birbal Sahni Centenary Gold Medal 91.

Paramasivan, Subramania*

Elected: 1939
Specialization: Archaeological Strata and Environment
Date of Birth: 1903
Last Address: 7, Rajachar Street, Thyagarajanagar, Madras 600 017, India
***Deceased:** 15 May 1987

Education: Madras Univ.: BSc, MA, DSc.

Career: Theosophical College, Madanapalli, Dept of Chem.: Lecturer; Ananda College, Ceylon, Dept of Phys.: Lecturer; Madras Govt Museum: Archaeological Chemist; Archaeological Survey of India: Archaeological Chemistry.

Scientific Work: Looked at the degradation of environment through the ages by doing research on archaeological strata and impressed such studies in the understanding of environment. Organized a chemical laboratory for the conservation of Indian wall paintings dating from second century BC at Ajanta and Ellora, Bagh and Tanjore. Excelled in the scientific conservation of ancient monuments and historic and artistic works. Initiated neutron activation analyses of ancient materials and thermoluminescence dating of ancient pottery.

Memberships: Fellow: London International Inst. for Conservation of Historic and Artistic Works.

Parameswaran, Aryampilly Jayanthan

Elected: 2009
Position: Dir, Kerala School of Maths, Kozhikode
Specialization: Algebraic Geometry; Singularity Theory; Vector Bundles
Date and Place of Birth: 20 June 1962; Kidangoor, Kerala
Parents: A V Jayanthan Bhattathiripad and Umadevi
Spouse and Children: Sujatha; one s (Sarang)
Address: Kerala School of Mathematics, P.O. Kunnamangalam, Kozhikode 673 571, India
Tel. (0495) 280 9000, (0495) 280 9001 (O), Mobile: 94464 29164
email: param@math.tifr.res.in, param_aj@yahoo.com

Education: Kerala Univ.: BSc 82; Central Univ. of Hyderabad: MSc 84; Univ. of Mumbai: PhD 92.

Career: TIFR, Mumbai: Res. Scholar 84–89, Res. Assoc. 89–91, Fellow 91–96, Reader 96–2001, Assoc. Prof. 2001–07, Prof. 2007–; Kerala School of Maths: Dir 2009–.

Scientific Work: As a leading algebraic geometer in India, made very significant contributions in diverse topics starting with singularity theory, one of the central topics in algebraic geometry. Subsequently worked on Frobenius splitting; topology of open varieties; vector bundles and principal bundles.

Important Publications: **(1)** On the Euler characteristic of open surfaces with connected boundary (1995) *Compositio Mathematica* **99**, 213–229. **(2)** Frobenius splittings and Blow-ups (1998) *J. Algebra* **208**, 101–128. **(3)** Semistability and semisimplicity in representations of low height in positive characteristic (2003) *Perspectives* *in geometry and representation theory*, Hindustan Book Agency, 271–282. **(4)** Euler obstruction and defects of functions on singular varieties (2004) *J. London Math. Soc.* **2**, 1, 59–76. **(5)** Monodromy group for a strongly semi-stable principal bundle over a curve II (2008) *J. K-Theory* **1**, 3 583–607.

Awards & Distinctions: IASc Assoc. 92–97 • Humboldt Fellow 92–93 • INSA Young Scientist Award 94.

Parameswaran, Hariharan*

Elected: 1934
Specialization: Optics; High Vacuum Techniques
Date and Place of Birth: 15 February 1897; Trivandrum
Parents: S Harihara Iyer and Bhagavati
Spouse and Children: Tara; two *s*
Last Address: University of Travancore, Kerala, India
***Deceased:** 25 March 1953

Education: Madras Univ.: MA 19; Univ. of Cambridge: PhD 22; London Univ.: DSc 24.

Career: Presidency College, Madras, Dept of Phys: Prof. 24–38; Univ. of Travancore, Dept of Technol.: Dir 38–41; Govt of Travancore, Dept of Industries: Dir 41.

Scientific Work: Early work included the design and construction of a new form of interferometer for high resolution spectroscopy as well as a simplified mercury vapour pump for obtaining a high vacuum. Responsible for estabishing a major school of experimental physics. Besides developing several vacuum systems, designed and built the Fyson clock located in the tower of the Presidency College, which is now one of the landmarks of Madras. Was a leader in the development of precision optics in India, built several large telescopes and developed techniques for making and testing an extensive range of precision optical components.

Memberships: Fellow: London Inst. of Physics; Physical Soc. of Great Britain.

Paranjape, Kapil Hari

Elected: 1997
Position: Prof., IMSc, Chennai; Vis. Faculty, IISER Mohali
Specialization: Algebraic Geometry; Topology; Differential Geometry
Date and Place of Birth: 19 March 1960; Mumbai, Maharashtra
Parents: Hari Krishna Paranjape and Manak
Spouse and Children: Sudeshna Sinha; one *d* (Shruti)
Address: IISER, Mohali, Transit Campus: MGSIPA Complex, Sector 26 Chandigarh 160 019
Tel. (0172) 2791 088 (O), (0172) 2688 466 (R) Mobile: 9445118997
email: kapil@imsc.res.in, kapil@iisermohali.ac.in; URL: http://www.imsc.res.in/~kapil

Education: IIT Kanpur: MSc 82; TIFR: PhD 92.

Career: TIFR: Res. Asst 82–87, Res. Assoc. 87–89, Fellow 89–93, Reader 93–; ISI, Bangalore: Prof. 95–96; Inst. Math. Sci.: Assoc. Prof. 96–2000; Prof. 2004–.

Scientific Work: For PhD thesis, studied the resolution by syzygies of the coordinate ring of a smooth projective algebraic curve, in collaboration with (S Ramanen) some partial results towards a conjecture of M Green were obtained. In another chapter a special case of the Hodge conjecture was studied (with M V Nori). Algebraic maps and topological ones originating in simply connected homogeneous spaces were studied (with V Srinivas) to obtain a partial solution to a problem posed by R Lazarsfeld which is as yet unresolved. Also (with V Srinivas) hypersurfaces of low degree were studied. This led to a series of conjectures on cycles on hypersurfaces; partial solution of these conjectures was presented as evidence.

Important Publications: **(1)** Self maps of homogeneous spaces (1989) *Invent. Math.* **98**, 2, 425–444. **(2)** Cohomological and cycle-theoretic connectivity (1994) *Ann. Math.* **140**, 641–660. **(3)** Bogomolov–Pantev resolution – An expository account (1999) *New Trends in Algebraic Geometry*, Cambridge Univ. Press. **(4)** The Hodge conjecture for a general Prym variety (2002) *J. Algebraic Geometry* **11**, 33–39. **(5)** Cycles over fields of transcendence degree one (2004) *Michigan Math. J.* **52**, 1, 181–187.

Memberships: Fellow: NASI 99 • Member: The Mathematics Advisery Board of arXiv.org, 2002.

Awards & Distinctions: IASc Assoc. 92–95 • B M Birla Award for Young Scientists 99 • S S Bhatnagar Award 2006.

Paranjpe, Gopal Ramachandra*

Elected: 1934
Specialization: Physics; Physical Chemistry
Date of Birth: 30 January 1891
Last Address: Sudarshan, 1159, Bhopatkar Road, Sadashivpeth, Poona 411 030, India
***Deceased:** 6 March 1981

Education: MSc.

Career: Royal Inst. of Sc., Bombay, Dept of Phys: Prof.

Scientific Work: Was specially interested in the design and manufacture of scientific instruments. Work in physics extended to electrical conductivities, extinction coefficients, homogeneity, Raman Effect, and coupling of dust nuclei.

Paranjpe, Pramod Anand

Elected: 1975
Specialization: Turbomachinery; Energy/Propulsion Systems
Date and Place of Birth: 1 April 1934; Mumbai
Parents: A S Paranjpe and Sushila
Spouse and Children: Wanamala; one *s*, one *d* (Ajit, Ranjana)
Address: Bahaar, 5, Hindustan Estate, Road No. 13, Kalyaninagar, Pune 411 006, India
Tel. (020) 2668 0255 (R)
email: papapp@pn2.vsnl.net.in; pramwana@gmail.com.

Education: IIT Kharagpur: BTech Hons 55; Swiss Federal Inst. of Technol., Zurich: DSc 63.

Career: Ateliers des Charmilles SA, Geneva: Hydraulic Engineer 55–56; Escher Wyss Ltd, Switzerland: Res. Engineer 56–64, IIT Kanpur, Dept of Mechanical Engg: Asst Prof. 64–66; NAL, Bangalore, Propulsion Dn: Head 66–87 and Dir Grade Sci. 82–87; Automotive Res. Assn of India, Pune: Dir 87–92.

Scientific Work: Tackled a variety of research and development problems pertaining to turbomachinery. Responsible for establishment of a turbomachinery and combustion laboratory for taking up research to help aeronautical and non aeronautical industries. Post retirement, on behalf of Venture Capitalists technical assessment of smart electro-mechanical devices and appliances.

Important Publications: **(1)** Self-excited vibrations of turbomachinery blading (1964) *Z. Angew. Math. Phys., Switzerland*, **15**, 6, 598–608. **(2)** Fluidic temperature sensor with a cooled signal tube (1973) *Trans. Instr. Soc. Am.* **22**, 4. **(3)** Jet curtain flame holder for aircraft afterburners ASME Paper No. 78-GT-95 (1978) *Proc. Intl. Gas Turbine Conf.* London. **(4)** Experimental evaluation of damping coefficient of squeeze-film mounted ball bearing (1979) *Proc. 4th Intl. Symp. Air-breathing Engines*, Florida. **(5)** Cycle optimization for a solar turbopack (1978) *Proc. Intl. Solar Energy Congress*, New Delhi.

Memberships: Fellow: Aeronautical Soc. of India • Member: American Soc. of Mechanical Engineers.

Awards & Distinctions: FIE Award 78 • National Gas Turbine Award for Lifetime Achievement 2001.

Parija, Prankrushna*

Elected: 1935
Specialization: Plant Physiology; Plant Morphology
Date and Place of Birth: 1 April 1891; Cuttack
Parents: Biswanath and Jayanti Devi
Spouse and Children: Sundarmani; three *s*, two *d*
Last Address: 10, Cantonment Road, Cuttack 753 001, India
***Deceased:** 2 June 1978

Education: Univ. of Calcutta: BSc Hons; Univ. of Cambridge, UK: Tripos 16–18.

Career: Ravenshaw College, Cuttack: Prof. of Botany 21–38, Principal 38–45; Utkal Univ.: Vice Chancellor 43–48, 55–66, Pro-Chancellor 51–55; Agriculture Dept, Orissa: Special Offr, Dir; BHU: Pro-Vice-Chancellor 49–51.

Scientific Work: Well known for Blackman–Parija paper on the respiration of apples in a current of ordinary air which stressed that it was an integration of two independent but opposite forces that characterized senescence. Earlier studied the respiration of cherry laurel leaves. Initiated research on plant respiration and a number of other areas such as control of the aquatic weeds – primarily water hyacinth – transpiration and heat resistance in plants, experimental plant morphology, physiology of rice, and ecology of fresh water and marine algae.

Memberships: Fellow: INSA 35; National Inst. of Sciences • President: Botany Section of Indian Sc. Congress.

Awards & Distinctions: Padma Bhushan 55.

Parimala, Raman

Elected: 1988
Position: Prof., Emory Univ., USA
Specialization: Algebra
Date and Place of Birth: 21 November 1948; Mayuram, Tamil Nadu
Parents: K Srinivasan and Rukmani
Spouse and Children: P S Raman; one s
Address: Department of Mathematics and Computer Science, Emory University,
400 Dowman Drive W 401, Atlanta, GA 30322, USA
Tel. (001) 404 727 7577 (O), (001) 404 444 8870 (R)
email: parimala@mathcs.emory.edu

Education: Univ. of Madras: BSc 68, MSc 70; Bombay Univ.: PhD 76.

Career: Ramanujan Inst., Madras: Res. Scholar 70–72; TIFR: Vis. Member 72–73, Res. Asst 72–73, Res. Fellow 73–74, Fellow 76, Reader 82, Assoc. Prof., Prof., Faculty, since 90, INSA Res. Fellow 86; ETH Zurich: Acad. Guest 78–79, 84–85; Emory Univ: Asa Griggs Candler Prof. 2005–.

Scientific Work: Study of quadratic spaces over the affine space, construction of nonextended quadratic spaces over the real affine plane giving a counterexample to a quadratic analogue of Serre's question on triviality of algebraic vector bundles on the affine space, construction of indecomposable quadratic spaces of large ranks over the affine plane, study of low rank quadratic spaces over schemes via invariants, study of division algebras and involutions, study of unramified cohomology of real algebraic varieties and their comparison with the real cohomology, study of principal homogeneous spaces over linear algebraic groups and a solution of a conjecture of Serre for fields of cohomological dimenison 2 for classical groups, study of arithmetic properties of certain 2-dimensional fields, u-invariants of function fields of p-adic curves.

Memberships: Fellow: INSA 90; NASI 92.

Awards & Distinctions: S S Bhatnagar Award 87 • Hon. Doctorate, Univ. of Lausanne 98 • TWAS Prize in Mathematical Sciences 2006 • Srinivasa Ramanujan Medal 2006.

Parnaik, Veena Krishnaji

Elected: 2008
Position: Sci.
Specialization: Cell Biology; Molecular Biology
Date and Place of Birth: 22 August 1953; Mumbai
Parents: K T Parnaik and Pushpa
Spouse and Children: R Nagaraj; one *d* (Sandhya)
Address: Centre for Cellular & Molecular Biology, Uppal Road, Hyderabad 500 007, India
Tel. (040) 2719 2614 (O), (040) 2701 9882 (R), Mobile: 98850 86220
email: veenap@ccmb.res.in

Education: Univ. of Mumbai: BSc 72, MSc 74; Ohio State Univ.: PhD 79.

Career: CCMB, Hyderabad: Res. Assoc. 80–81, Sci. 81–.

Scientific Work: Current research interests are directed towards understanding the functional roles and regulation of the nuclear lamina, an essential component of nuclear structure in metazoan cells. Identified a structural role for lamins in supporting RNA splicing factor compartments and shown that lamins spatially coordinates transcription and pre-mRNA splicing. Further work has demonstrated that the lamina is reorganized specifically during muscle differentiation and this is mediated by cyclin D3 and the retinoblastoma protein. Interestingly, cyclin D3 can bind directly to lamin A; this supports the emerging concept that lamins influence specific signalling pathways by sequestration of key regulatory factors. Also, mutations in the lamin A gene impair muscle differentiation and DNA repair processes in cultured cells. These studies have significant implications for understanding why most mutations in the human lamin A gene cause debilitating inherited diseases that affect muscle tissues and also cause progerias.

Important Publications: **(1)** Colocalization of intranuclear lamin foci with RNA splicing factors (1999) *J. Cell Sci.* **112**, 4651–4661. **(2)** Distinct changes in intranuclear lamin A organization during myoblast differentiation (2001) *J. Cell Sci.* **114**, 4001–4011. **(3)** Lamin A/C speckles mediate spatial organization of splicing factor compartments and RNA polymerase II transcription (2002) *J. Cell Biol.* **159**, 783–793. **(4)** Sequestration of pRb by cyclin D3 causes intranuclear reorganization of lamin A/C during muscle cell differentiation (2005) *Mol. Biol. Cell* **16**, 1948–1960. **(5)** Expression of disease-causing lamin A mutants impairs the formation of DNA repair foci (2006) *J. Cell Sci.* **119**, 2704–2714.

Memberships: Fellow: INSA 2004.

Awards & Distinctions: Shakuntala Amirchand Prize 92 • P A Kurup Endowment Lecture Award 97.

Parthasarathy, Kalyanapuram Rangachari

Elected: 1974
Position: Emeritus Prof., ISI, Delhi
Specialization: Probability Theory; Group Representations; Quantum Probability; Computing and Information
Date and Place of Birth: 25 June 1936; Madras
Parents: K S Rangachari and R Pichammal
Spouse and Children: Shyamala; two s (Ramesh, Harish)
Address: Indian Statistical Institute, 7, SJS Sansanwal Marg, New Delhi 110 016, India
Tel. (011) 4149 3923, (011) 4149 3901 (O), (011) 2279 4197(R)
email: krp@isid.ac.in

Education: Univ. of Madras: BA Hons 56, MA 57; ISI, Calcutta: Professional Statistician's Training Course 59; Univ. of Calcutta: PhD 62.

Career: ISI, Calcutta: Lecturer 62–65; ISI, Delhi: Prof. 76–84, Distinguished Sci. 84–96; Steklov Math. Inst., USSR: Vis. Fellow 62–63; Univ. of Sheffield, UK: Lecturer 65–66, Sr Lecturer 66–67, Reader 67–68; Univ. of Manchester, UK: Prof. 68–70; Univ. of Bombay: Prof. 70–73; IIT New Delhi: Prof. 73–76.

Scientific Work: Contributions relate to integral representation for entropy of sources and rates of information transmission in channels; examples where ergodic measures are weakly dense in the convex set of invariant probability measures; Levy–Khinchine theorems for probability distributions in groups; study of representations of complex semi-simple Lie algebras; and development of quantum stochastic calculus. Many of these works have been done in collaboration with other scientists.

Important Publications: **(1)** *Probability measures on metric spaces* (1967) Academic Press, NY. **(2)** *An introduction to quantum stochastic calculus* (1992) Birkhauser Verlag, Basel. **(3)** *Coding theorems of classical and quantum information theory* (2007) Hindustan Book Agency, New Delhi. **(4)** Quantum Ito's formula and stochastic evolutions (1984) *Commun. Math. Phys.* **96**, 301–323. **(5)** Markov dilations of nonconservative dynamical semigroups and a quantum boundary theory (1995) *Ann. Inst. H. Poincare, Probab. Statist.* **31**, 601–651.

Memberships: Fellow: INSA 76; NASI 90; TWAS 98 • President: Statistical Sec. of Indian Sc. Congress 92.

Awards & Distinctions: S S Bhatnagar Award 76 • TWAS Prize 97.

Parthasarathy, Rajagopalan

Elected: 1982
Position: Sr Prof., TIFR, Mumbai
Specialization: Representations of Semi-Simple Lie Groups; Topological Dynamical Systems
Date and Place of Birth: 6 October 1945; Madras
Parents: J Rajagopalan and R Pattammal
Spouse and Children: Swarnalatha; two s
Address: School of Mathematics, Tata Institute of Fundamental Research
Homi Bhabha Road, Mumbai 400 005, India
Tel. (022) 2278 2246 (O), (022) 2280 4762 (R), Mobile: 98672 04762
email: sarathy@math.tifr.res.in; URL: http://www.math.tifr.res.in/~sarathy

Education: Univ. of Madras: BSc 65; IIT Madras: MSc 67; Bombay Univ.: PhD 72.

Career: TIFR, Bombay, School of Maths: Prof. 67–; MIT, USA: CLE Moore Instructor 71–72; Inst. for Advanced Study, USA: Vis. Member 72–73; Univ. of California, USA: Vis. Asst Prof. 76–77.

Scientific Work: Worked on the explicit realization of discrete series in the space of square integrable solutions of the Dirac operator on the symmetric space associated with the semi-simple Lie group G. Proved a vanishing theorem in the case of holomorphic discrete series. With R Hotta, studied the spectrum of L^2(G/Gamma), where (capital gamma) is a co-compact discrete subgroup of G. Using homological algebra methods, constructed a class of modules for a semi-simple Lie algebra, proved their unitarizability and verified Blattner's conjecture in several cases. Initiated the construction of generalized Enright–Varadarajan modules, which are now known as derived functor modules (or, also, Zuckerman modules). Obtained a definitive solution in the problem of classifying unitary highest weight modules with a non-singular integral (or semi-integral) infinitesimal character in a work, widely acclaimed.

Important Publications: **(1)** Dirac operator and discrete series (1972) *Ann. Math.* 96. **(2)** Multiplicity formulas for discrete series (1974) *Invenziones. Math.* 26. **(3)** A generalization of the Enright–Varadarajan modules (1978) *Compositio. Math.* 36. **(4)** Criteria for the unitarizability of some highest weight modules (1980) *Proc. Indian Acad. Sci.* A89. **(5)** A product for harmonic spinors on reductive homogeneous spaces (2008) *J. Lie Theory* 18.

Memberships: Fellow: INSA 85; NASI 90.

Awards & Distinctions: S S Bhatnagar Award 85.

Parthasarathy, Thiruvenkatachari

Elected: 1988
Position: INSA Sr Sci., ISI, Chennai
Specialization: Mathematical Theory of Games, Operations Research and Global Univalence
Date and Place of Birth: 1 March 1941; Madras
Parents: A K Thiruvenkatachari and Shakunthala
Spouse and Children: Ranjani; one *s*, one *d*
Address: SQC/OR Unit, Indian Statistical Institute, 37/110, Nelson Manikham Road,
Chennai 600 029, India
Tel. (044) 2374 0612, (044) 2374 0218 (O), (044) 2233 2633 (R)
email: pacha14@yahoo.com

Education: Univ. of Madras: BSc 60, MSc 62; ISI, Calcutta: PhD 67.

Career: Univ. of California, USA: Acting Asst Prof. 67–68; Case Western Reserve Univ., USA: Asst Prof. 68–70; ISI, Calcutta: Assoc. Prof. 70–72, Prof. 79–; Univ. of Illinois, USA: Vis. Assoc. Prof. 72–75; De Paul Univ., USA: Vis. Member 75–78; Kansas Univ, USA: Vis. Lecturer 78–79.

Scientific Work: In stochastic game theory, isolated certain classes of games which possess order field property which is extremely useful from the point of view of finite algorithms. Following the works of Gale and Nikaido showed that F is injective if J is almost P or almost N matrix. Attempted to see what happens if F is a polynomial map and this takes us to the famous Jacobian conjecture problem.

Important Publications: **(1)** *Some topics in two person games* (1971) Elsevier Publishing Company. **(2)** On global univalence theorems (1983) *Lecture Notes in Mathematics,* 977, Springer Verlag. **(3)** *Mathematical programming and game theory for decision making* (2008) Platinum Jubilee of ISI, 1, World Scientific.

Memberships: Fellow: INSA 95; NASI.

Awards & Distinctions: S S Bhatnagar Award 86.

Parulkar, Gurukumar Bhalchandra

Elected: 1984
Position: Consultant, Cardiovascular Surgery, Heart Institute, Mumbai
Specialization: Pen Heart Surgery; Extracorporeal Circulation; Coronary Bypass Surgery; Vascular Surgery
Date and Place of Birth: 1 December, 1931; Bombay, Maharashtra
Parents: Bhalchandra and Shantabai
Spouse and Children: Vidya; one *s*, one *d* (Bhalchandra, Amala)
Address: Cardiovascular Surgery, Heart Institute, 95, August Kranti Marg, Mumbai 400 036, India
Tel. (022) 2380 3336, (022) 2653 4444 (O), (022) 2353 6546 (R)
email: gurukumar@gmail.com

Education: Univ. of Mumbai: MBBS 55, MS 58.

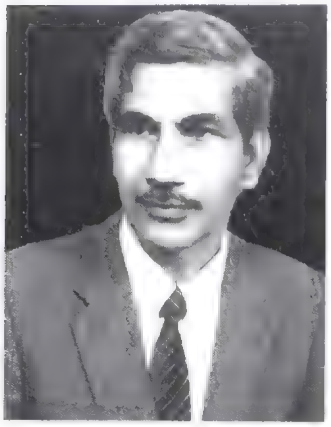
Career: Seth G S Med. College and K E M Hospital, Bombay, Dept of Cardiovascular and Thoracic Surgery: Jr Resident 55–56, Sr Resident 56–59, Lecturer 59–62, Asst Prof. 62–64, Prof. 64–74, Dir 74–84, Dean 84–90, Chmn 90–; Oregon Health Sc. Centre, USA: Postdoc Res. Fellow; Natl Heart Inst., USA 86–88; Heart Inst., Bombay: Consultant Cardiovascular Surgeon 90–94; Khorakiwala Heart Foundation: Chmn Dir of Res. Council 90–98; Hon. Consultant to Governor of Maharashtra.

Scientific Work: Experimental and clinical heart transplantation. Use of new technique of aortoplasty in the treatment of congenital coarctation of aorta; use of online electrical impedance plethysmogram for diagnosis of peripheral arterial block and deep venous thrombosis and cardiac diseases; use of modified technique for complex congenital heart diseases and valvular heart disease.

Memberships: Fellow: American College of Surgeons; National Institute of Health; Acad. of Medical Sci.; International Council for Artificial Heart; Royal Soc. of Medicine; Intl Soc. of Cardiac Surgeons; Australasian Soc. of Cardiothoracic Surgeons.

Awards & Distinctions: Giants Internationational, Outstanding Physician of Decade Award 73–82.

Passi, Inder Bir Singh



Elected: 1986
Position: Prof. Emeritus; Panjab Univ., Chandigarh; Hon. Prof., IISER, Mohali
Specialization: Algebra
Date and Place of Birth: 20 August 1939, Bilaspur, Haryana
Parents: Hukam Chand and Jasmer Kaur
Spouse and Children: Surinder; two *d*
Address: 381, Sector 38-A, Chandigarh 160 014, India
Tel. (0172) 254 1132 (O), (0172) 269 1824 (R), Mobile: 98724 48638
email: ibspassi@yahoo.co.in, passi@pu.ac.in

Education: Panjab Univ.: BA Hons 58, MA 60; Univ. of Exeter, England: PhD 66.

Career: Natl College, Sirsa: Lecturer 60–61; Kurukshetra Univ., Dept. of Mathematics: Lecturer 61–67, Reader 67–75, Prof. 75–79; Panjab Univ.: Prof. of Maths 79–2000, INSA Sr Sci. 2005–2009, Prof. Emeritus 2005–; Univ. of California, USA: Vis. Prof. 88–89; Harish-Chandra Res. Inst., Allahabad, Vis. Prof. 2000–05; Indian Inst. of Sci. Education and Res. Mohali: Hon. Prof. 2007–.

Scientific Work: Investigated the structure of augmentation quotients, the identification of dimension subgroups, a filtration of Schur multiplicator, relation modules and Lie structure of group rings. Carried out studies of algebraic elements in group rings, Jordan decomposition in group rings, hyperbolic unit groups, combinatorial and homological methods in group rings.

Important Publications: **(1)** A contribution to Bass' conjecture (2004) *J. Group Theory* **7**, 409–420. **(2)** Hyperbolic unit groups (2005) *Proc. Am. Math. Soc.* **133**, 415–423. **(3)** The quasi-variety of groups with trivial fourth dimension subgroups (2006) *J. Group Theory* **9**, 369–381. **(4)** The multiplicative Jordan decomposition in group rings II (2007) *J. Algebra* **316**, 109–132. **(5)** Group homology and extensions of groups (2008) *Homology, Homotopy and Applications* **10**, 237–257.

Memberships: Fellow: NASI 86; INSA 89.

Awards & Distinctions: S S Bhatnagar Award 83 • Meghnad Saha Award 88.

Pasupathy, Jagadisan

Elected: 1988
Specialization: Theoretical Physics
Date and Place of Birth: 1 October 1940; Vellore, Tamil Nadu
Parents: Jagadisan and Padmavathy
Spouse and Children: Jayalakshmi: two *s* (Jagadish Shankar, Abhay Narayanan)
Address: 3286, 12th Main Road, HAL II Stage, Bangalore 560 008, India
Tel. (080) 2525 1592 (R)

Education: Univ. of Madras: BSc Hons 60; Univ. of Rochester, USA: PhD 66.

Career: Univ. of Rochester, USA: Res. Assoc. 66–67; Univ. of Rockfeller, USA: Res. Assoc. 67–68; TIFR, Bombay: Fellow/Reader 68–76; IISc, Bangalore, Centre for Theoretical Studies: Assoc. Prof. 76–81, Prof. 81–2002, Hon. Prof. 2002–07; European Centre of Nuclear Res., Switzerland: Sci. Assoc. 78–79.

Scientific Work: In current algebra provided a straight forward method to derive soft pion theorems avoiding the problem of Schwinger terms. Paradoxes in the eta and eta prime decay were resolved to establish the representation of chiral Lagrangian. Dynamical basis of the Okubo–Zweig Lizuka quark line selection using unitarity was laid out to explain the complex modes of decay quarkoium bound states of strange-antistrange and charm anticharm quarks. In quantum chromodynamics, significant results include–nucleon size, axial vector renormalization, magnetic moments, in medium properties, baryon magnetic moments, F and D Cabibbo couplings for weak decay. Parity doubled of baryon was predicted in 1985 several years before other authors. The role on anomaly is restoring of flavor symmetrical for a proper understanding of Bjorken sum rule was pointed out and quantitative computations were given. Topological susceptibility and its derivatives for computed to find the mass of eta prime the U(1) meson in the chiral limit verfying witten's relation.

Important Publications: **(1)** Minimal Interactions and Soft Pion Emission Process (1966) *Nuovo Cimento* **45A**, 780. **(2)** Antiferromagnet with next nearest neighbor interactions (1970) *Proc. Nuclear Solid State Phys.* Dec. 27–30, Madurai, India, p. 753. **(3)** Unitarity and partial width for Phi 3Pi (1975) *Phys. Rev.* **D12**, 2929. **(4)** Renormalization of the axial-vector current in QCD (1985) *Phys. Rev* **D32**, 1786. **(5)** The Gaussian Toeplitz matrix (1992) *Linear Algebra and its Applications* **171**, 133–147. **(6)** The derivative of the topological susceptibility at zero momentum and ab estimate of the etaprime mass in the chiral limit (2006) *Phys. Lett.* **B634**, 508.

Patel, Ambalal Ranchhodhbhai*

Elected: 1975
Specialization: Solid State Physics; Crystal Growth; Imperfections
Date and Place of Birth: 12 May 1917; Varnama, Baroda
Last Address: Department of Physics, Sardar Patel University, Vallabh Vidyanagar 388 120, India
***Deceased:** 3 December 2000

Education: Univ. of Bombay: BSc 41, MSc 44; Univ. of London: PhD 58.

Career: V P Mahavidyalaya Sc. College, Gujarat, Dept of Phys: Prof. 47–58, Principal 58–63; Sardar Patel Univ., Gujarat, Dept of Phys: Prof. 63–66, 77–79, Sr Prof. 66–77, CSIR Emeritus Sci. 80–82, Hon. Prof. 83; Summer Sci. Inst in Phys: Dir 65–73.

Scientific Work: Contributed to the understanding of crystal growth and X-ray crystallography.

Memberships: Member: Gujarat Acad. of Science.

Patel, Chunibhai Chhotabhai*

Elected: 1975
Specialization: Coordination Chemistry, Spectroscopy, Mineral Dressing
Date and Place of Birth: 17 March 1920
Parents: C B Patel and Surajben
Spouse and Children: Suman; three *s*, two *d*
Last Address: 5/11, 18th Cross Road, Malleswaram, Bangalore 560 055, India
***Deceased:** 15 December 1987

Education: Univ. of Bombay: BSc 42, Chemical Engg Course 43, MSc 48, PhD 50.

Career: IISc, Bangalore, Dept of Inorganic Phys Chem.: Lecturer 50–59, Asst Prof. 59–67, Assoc. Prof. 67–69, Prof. 70–80.

Scientific Work: Studies on the synthesis and characterization of complexes of various stereochemistries of transition metals, especially with flexidentate ligands are of basic importance as they throw light on the mechanism of reactions in biochemical systems. Demonstrated that adsorption is a function of Miller indices of a mineral plane. Discovered new and efficient specific collectors for the beneficiation of metals. Constructed a special DTA apparatus for working in controlled atmosphere and vacuum. Work on hydrosulphite attracted the attention of industrialists in UK, Germany and other countries.

Memberships: Fellow: Indian Chemical Soc.

Patel, Jamnadas Chaturbhai*

Elected: 1956
Specialization: Diabetes; Internal Medicine; Tetanus
Date and Place of Birth: 2 August 1908; Karamsad, Kaira Dist, Gujarat
Parents: Chaturbhai Patel and Samjuben
Spouse and Children: Maniben; one *s*, three *d*
Last Address: Backbay View, 3, New Queens Road, Bombay 400 004, India
***Deceased:** 11 May 2003

Education: Bombay Univ.: BSc 33, MBBS 32, MD 35; London Univ.: PhD 38.

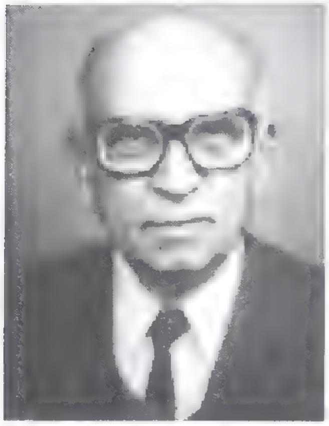
Career: Seth G S Medical Coll., Bombay: Lecturer in Medicine; Singhani Hindu Hospital: Hon. Physician 39–50; KEM Hospital, Bombay: Hon. Physician 41–67; Bombay Univ.: Prof. in Medicine 41–67; Bombay Hospital: Hon. Physician 50–.

Scientific Work: Carried out investigations on anaemia, amoebiasis, fevers, haematology, diabetes and tetanus.

Memberships: Fellow: Natl Acad. of Medical Sci. • Member: Intl Soc. of Internal Medicine; British Diabetics Assn • President: Indian Soc. of Haematology and Blood Transfusion; Indian Med. Assn.

Awards & Distinctions: Distinguished Physician, Assn of Physicians of India 90.

Patel, Jashbhai Shankerbhai*



Elected: 1934
Specialization: Initiated Cyclic Crossing in Coconut and Observations From Seedling to Regular Bearing Age of Selected Plants in Two Contrasting Environments
Date and Place of Birth: 11 December 1905; Tarapur, Kaira Dist, Bombay
Parent: S B Patel
Spouse and Children: Kamala; four children
Last Address: Gadapura, Gotri Road, Baroda 390 015, Jabalpur, India
***Deceased:** 20 April 1992

Education: Cornell Univ., USA: MS; Univ. of Edinburgh, England: PhD.

Career: Government of Madras, Coimbatore: Oilseeds Specialist 30–38; Jute Agri. Res., Dacca: Dir 38–44; Bihar Agri. College: Principal 44–49; Dept of Agri., Bihar: Dir 49–55; Ministry of Community Res.: Agri. Adviser 55–59; Ministry of Food & Agri.: Agri. Commissioner 59–64; Jawaharlal Nehru Agri. Univ., Jabalpur: Vice-Chancellor 64–68.

Scientific Work: Work on a range of oil seeds and heterosis breeding were concepts far beyond those times. Responsible for the construction of minor irrigation projects, wells and tubewells, reclamation of land, soil conservation, popularization of improved seeds, implements and fertilizers.

Memberships: Member: National Planning Council • President: Indian Soc. for Agri. Engineers.

Awards & Distinctions: Padma Shri 65.

Patel, Makanji Kalyanji*

Elected: 1948
Specialization: Plant Pathology
Date and Place of Birth: 6 November 1899; Bajipura, Assam
Last Address: B S College of Agriculture, Poona 411 005, India
***Deceased**

Education: Univ. of Illinois, USA: BSc 23; Iowa State College, USA: MSc 25, PhD 28.

Career: Iowa Agri. Experiment Station, USA: Fellow 24–26; NRC, USA 27; Dept of Agri., USA: Agent 28; Dept of Agri., Sind: Rice Mycologist 30, Agri. College, Poona: Asst Prof. of Mycology, Prof. of Plant Pathology 31–47; Govt of Bombay, Poona: Plant Pathologist 47–.

Scientific Work: Published papers dealing with fungi and plant bacteria and has done valuable work in plant bacterial diseases. Was accorded recognition for the medium new solar treatment against loose smut of wheat and bacterial nomenclature.

Pathak, Kare Narain

Elected: 1993
Position: Prof. Emeritus, Panjab Univ.
Specialization: Condensed Matter Physics
Date and Place of Birth: 30 July 1941; Chaukhari-Baragaon, Gyanpur, Uttar Pradesh
Parents: M B Pathak and Kunti
Spouse and Children: Kulwanti; two *s*, three *d* (Sanjay, Vindhya, Vimal, Geeta, Usha)
Address: # 382, Sector 38 A, Department of Physics, Panjab University, Chandigarh 160014, India
Tel. (0172) 253-4467 (O), (0172) 269 9944 (R), Mobile: 98720 38382
email: pathak@pu.ac.in

Education: Agra Univ.: BSc 60: Allahabad Univ. : MSc 62; IIT Kanpur: PhD 67.

Career: IIT Bombay, Dept of Phys.: Lecturer 66–67; Natl Res. Council, Canada: Postdoc Res. Fellow 67–69; Northwestern Univ., USA, Dept of Phys: Res. Assoc. 69–70, Vis. Prof. 79; Panjab Univ., Chandigarh, Dept of Phys.: Reader 70–77, Prof. 77–2001, Vice Chancellor 2000–06, Prof. Emeritus 2006–; Tech. Univ. Munich, Germany, Dept of Phys.: Alexander von Humboldt Stiftung Sr Fellow 77–79, 92; Freie Univ., Berlin 2006, 2008; ICTP, Italy: Assoc. 72–77, Vis. Sci. 82, Sr Assoc. 92–98, Vis. Sci. 99.

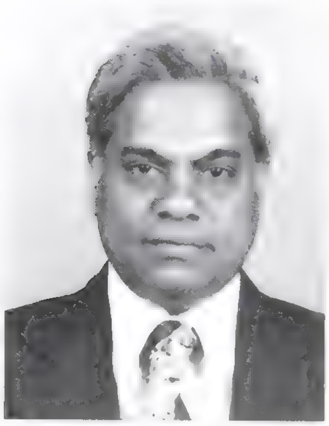
Scientific Work: Made distinct contributions to liquid state dynamics, quantum liquids, electron correlations in Coulomb fluids and phonon–phonon interaction in solids. Several exact results for the dynamical correlation functions of density, currents and energy fluctuations in liquids have been obtained. These results have been used to predict the dynamical transport coefficients (DTC) of fluids. Work on mean field theory of classical liquids explained the experimental results for the collective excitations in liquids. The demonstration of the existence of two relaxation times is a general characteristic of liquid. Binary cluster theory of dynamics of fluids where two-particle collisions of all orders have been summed up, provides the DTC of fluids using only the temperature, density and inter-atom potential. The theory being exact in a given space–time domain, provides the Enskog result for the transport coefficients in appropriate limit. Work on electron correlations predicted exact result for local-field function $G(q, \omega)$ for $q \to \infty$. Work on effect of electron correlations on diamagnetism has been significant. The predictions of ground state properties in low-dimensional electron systems at the interface of semiconductor heterojunction are consistent with computer simulation results and experimental data. Developed an exact theory for the interaction energy between positronium atom and metal surface by taking into account all atomic multipolar-excitations. The study of the anharmonic effects in solids provides for the first time both thermodynamic and dynamical properties in a self-consistent manner. Predicted the formation of two acoustic phonon bound states.

Important Publications: **(1)** Sum rules and atomic correlations in classical liquids (1974) *Phys. Rev.* **A9**, 2773–2782. **(2)** Binary collision contributions to atomic motions in fluids (1994) *Phys. Rev.* **E50**, 1135–1143. **(3)** Electron correlations and moment sum rules (1973) *Bull. A. Phys. Soc.* **17**, 279; (1972) *Phys. Rev.* **B7**, 3649–3656. **(4)** Interaction energy between a positronium and a metal surface (1985) *Phys. Rev.* **B32**, 3502–3506. **(5)** Self energy of phonons in an anharmonic crystal of O(λ4) (1974) *Nuovo Cimento* **21B**, 289–302.

Memberships: Fellow: NASI 83; INSA 2009 • Founder Member: Soc. for Scientific Values.

Awards & Distinctions: Goyal Prize for Physics • Meghnad Saha Award • Sr Assoc. Member, The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy • UGC National Fellowship Award • National Lecturer Award • Alexander von Humboldt Senior Fellowship Award • National Research Council of Canada Postdoc Research Fellowship Award.

Patnaik, Lalit Mohan



Elected: 1988
Position: Vice Chancellor, Defence Inst. of Advanced Technol., Pune
Specialization: Computer Science and Engineering; Information Technology; Electronics
Date and Place of Birth: 22 July 1946; Kasinagar, Orissa
Parents: Kumar Swami Patnaik and Dhanamani
Spouse and Children: Gangabai; one *d* (Sushree)
Address: Defence Institute of Advanced Technology, Deemed University, Girinagar, Pune 411 025, India
Tel. (020) 2430 4001 (O), (020) 2430 4002 (R), Mobile: 98451 64976
email: lalit@diat.ac.in

Education: Sambalpur Univ.: BSc (Engg) 69; IISc, Bangalore: ME 71, PhD 78, DSc 89.

Career: IISc, Bangalore: Sr Res. Asst 71–76, Systems Programmer 76–80, Asst Prof. 80–83, Assoc. Prof. 83–86, Prof. 86–2008; Defence Inst. of Advanced Technol., Pune: Vice Chancellor, 2008–.

Scientific Work: Research interests include high performance computing, soft computing, computer aided design of VLSI circuits, mobile computing, computatonal neuroscience, medical imaging, information retrieval and security including web design and mining. Pioneering contributions have been the design of an intelligent configuration of hierarchical network of extended hypercube. Developed an exact model for analysing the working of genetic algorithms, a distributed channel access protocol that occupies the channel reservation and the iterative/global transmission power control schemes in wireless adhoc networks, test-set selection technique based on the frequency domain testing of analog circuits. This technique is best suited for use of the existing building blocks in systems-on-chip for implementation of an on-chip test-signal generator and test response analyser. Real-time multivariable computer control has been demonstrated through direct digital and supervisory control algorithms for an ammonia reactor in fertilizer, steel, and nuclear industries. Developed techniques to classify MRI images for neurological disorders.

Important Publications: **(1)** A new ATPG technique (ExpoTan) for testing of analog circuits (2007) *IEEE Trans. Computer Aided Design* **26**, 1, 189–196. **(2)** A distributed channel access protocol for ad-hoc networks with feedback power control (2006) *IEEE Trans. Mobile Computing* **5**, 10, 1448–1459. **(3)** Application of genetic programming for multicategory pattern classification (2000) *IEEE Trans. Evolutionary Computation* **4**, 3, 242–258. **(4)** High-speed parallel implementation of modified PBR algorithm on DSP-based EH topology (1997) *IEEE Trans. Nuclear Science* **44**, 4, 1658–1672. **(5)** Mapping of artificial neural networks onto message passing systems (1996) *IEEE Trans. Systems, Man, and Cybernetics i* – B, **26**, 6, 822–835.

Memberships: Fellow: NASI 88; INSA 92; INAE 92; TWAS 98 • Life Member: Orissa Information Technology Soc.; Indian Science Congress Assn, National Telematics Forum; Instrument Soc. of India; VLSI Soc. of India • Member of Council: Indian Complex Systems Soc.

Awards & Distinctions: Vikram Sarabhai Research Award • Platinum Jubilee Lecture Award • Indian Science Congress • Samanta Chandrasekhar Award • IEEE Computer Society's Technical Achievement Award • Sir C V Raman Memorial Lecture Award • Pandit Jawaharlal Nehru National Award for Engineering and Technology • Om Prakash Bhasin Award • FICCI Award • Goyal Prize for Applied Science • Srinivasa Ramanujan Birth Centenary Award.

Patodi, Vijay Kumar*

Elected: 1975
Specialization: Analytical Proof of the Index Theorem; Differential Geometry
Date and Place of Birth: 12 March 1945; Guna, Madhya Pradesh
Parents: Motilal Patodi
Spouse: Pushpa
Last Address: School of Mathematics, Tata Institute of Fundamental Research, Bombay 400 005, India
***Deceased:** 21 December 1976

Education: Vikram Univ., Ujjain: BSc; BHU, Varanasi: MSc 66; Univ. of Bombay: PhD 71.

Career: TIFR, Bombay, School of Mathematics: Assoc. Prof. 67–76, Prof. 76.

Scientific Work: Major contributions in the study of differential geometric invariants of manifold. Studied on curvature and the eigen forms of the Laplace operator and an analytic proof of the Riemann–Roch–Hirzebruch theorem of Kaehler manifolds established excellence as differential geometer. Did significant work in the areas related to work of Atiyah and Singer on the Riemann–Roch–Hirze-bruch theorem for Kaehler manifolds.

Awards & Distinctions: INSA Young Scientists Award • Narasinga Rao Gold Medal.

Patwardhan, Vilas Shridhar

Elected: 1995
Specialization: Computer Simulation; Mathematical Modelling; Multiphase Reactions; Software Development; Spreadsheet Programming
Date and Place of Birth: 13 October 1947; Thane, Maharashtra
Parents: Shridhar Prabhakar Patwardhan and Prabhavati
Spouse and Children: Meena; one *s*, one *d* (Parag, Manjiri)
Address: 3, Vibha Heights, Sanewadi, Baner Road, Aundh, Pune 411 007, India
Tel. (020) 2588 8126 (O), (020) 2588 2058 (R)
email: vspatw@vsnl.com

Education: IIT Bombay: BTech 69; Purdue Univ., USA: MS 71, PhD 74.

Career: NCL, Pune, Dept of Chemical Engg: Sci. 74–81, Asst Dir 81–91, Dy Dir 91–97. Syracuse Univ., USA, Chemical Engg Dept: Vis. Scholar 82–83, Self employed 97–.

Scientific Work: Developed a new expression for the excess-free energy of aqueous single electrolyte solutions and a unified approach for predicting the properties of mixed electrolyte solutions; a Markov-chain based approach for describing the diffusion in zeolites; a procedure for studying the sensitivity of heat exchanger networks which is computationally very efficient; the concept of apparent porosity explaining some unusual phenomena in fluidisation of mixed particle systems. Has evolved a procedure that accounts for the stagnant zones in gas absorbers in a quantitative manner. Has also applied computer simulation to a number of industrially important problems including naphtha reformers, a drum granulator, a series of distillation columns, and polymerization reactors for polyethylene, and polyethylene terephthalate.

Important Publications: **(1)** Effective interfacial area in packed beds for absorption with chemical reaction (1978) *Can. J. Chem. Eng.* **56**, 1, 56–64 **(2)** Sedimentation and liquid fluidisation of solid particles of different sizes and densities (1985) *Chem. Eng. Sci.* **40**, 1051. **(3)** A unified approach for the prediction of thermodynamic properties of aqueous mixed electrolyte solutions, Part I and II: Vapour pressure and heat of vaporisation; Volume, thermal and other properties (1986) *AIChE J.* **32**, 1419. **(4)** Diffusion and sorption in zeolites – I: A Markov process formulation (1989) *Chem. Eng. Sci.* **44**, 2619. **(5)** Sensitivity analysis of heat exchanger networks (1991) *Chem. Eng. Sci.* **46**, 451.

Memberships: Fellow: INAE 91; Maharashtra Acad. of Science.

Awards & Distinctions: Amar Dye-Chem Award 81 • Chinnamaul Memorial Prize 81 • Herdillia Award 91.

Paul, Ram Chand*

Elected: 1974
Specialization: Inorganic and Physical Chemistry
Date and Place of Birth: 20 October 1919; Shakargarh, Pakistan
Parents: Jagdish Ram and Ganesh Devi
Spouse and Children: Bimla; one *s*, one *d* (K K Paul, Madhu)
Last Address: 695, Sector 8-B, Chandigarh 160 018, India
***Deceased:** 16 February 2002

Education: Punjab Univ.: BSc Hons 39, MSc 40, PhD 47; Cambridge Univ.: PhD 54, ScD 68.

Career: Punjab Univ., Dept of Chem.: Demonstrator, Lecturer and Reader 40–58, Prof. and Head 59–74, Dean of Univ. Instruction 65–67, Vice-Chancellor 74–85, Emeritus Prof. 85; Karnatak Univ., Dharwar: Prof. & Head 58–59; UGC Natl Lecturer in Chem. 70–71.

Scientific Work: Worked on fluorine chemistry. Pioneered research on non-aqueous solvents, then a new field in India. Worked on the chemistry of uranium and other elements. Standardized the solution chemistry of a large number of solvents such as acid halides, amides, and strongly protonic acid media. Carried out in depth investigations on a diverse variety of solvents including ethyl acetate, formamide, dimethylformamide, acetamide, acetic anhydride, dimethyesulphoxide, nitrobenzene nitromethane, ethylformate, acetic acid, formic acid, sulphur monochloride sulphur, dichloride, phosphoryl bromide, thiophosphoryl chloride, triethyl phosphate, tri *n*-butylphosphate, disulphuric acid, fluorosulphuric acid, chlorosulphuric acid, methanesulphuric acid and imido-bis-(sulphuryl chloride).

Important Publications: **(1)** Amides as nonaqueous solvents (1968) *New pathways in inorganic chemistry* Cambridge Univ. Press. **(2)** Inorganic halides and oxyhalides as solvents, *The Chemistry of non-aqueous solvents* Vol. 5, Academic Press, NY. **(3)** Uranium (IV) acetate (1967) *Inorg. Syntheses* **9**, 41–43. **(4)** Vanadium (IV) oxodichloride preparation and a study of its solvolytic reactions (1974) *Proc. INSA* **40**, 64–75.

Memberships: Fellow: NASI; INSA 67; Royal Soc. of Chem. • Member: Indian Chemical Soc.; American Chemical Soc.; London Chemical Soc.

Peacock, David Henry*

Elected: 1934
Specialization: Physical Chemistry
Date of Birth: December 1889
Parents: C G Peacock and Catherine
Spouse: Catherine Tait
Last Address: Greenways, Harston, Cambridgeshire, UK
***Deceased**

Education: Univ. of Cambridge: DSc.

Career: Nobel's Explosives Factory: 13–16; British Dyes 16–22; Tech. Dept Huddersfeld: Chief Asst 20–22; Univ. of Rangoon, Burma: Prof. of Chem. 22–40; Govt of Burma: Spl Chemical Adv. 38–40; Ministry of Aircraft Production, UK: 42–45; Ministry of Supply, UK: Chemical Consultant 45–47; Univ. of Sheffield: Lecturer in Org. Chem. 47–.

Pental, Deepak

Elected: 2000
Position: Vice Chancellor, Univ. of Delhi
Specialization: Transgenic Crops; Breeding of Oilseed Mustard
Date and Place of Birth: 12 February 1951; Jahan Khelan, Punjab
Parents: R K Pental and Nirmala
Spouse and Children: Archana; one *s*
Address: University of Delhi, Delhi 110 007, India
Tel. (011) 2766 7190, 2411 5203 (O), (011) 2411 2768 (R)
email: dpental@gmail.com

Education: Panjab Univ.: BSc 71, MSc 73; Rutgers Univ. USA: PhD 78.

Career: Univ. of Nottingham: Postdoc and Univ. Res. Fellow 78–84; TERI: Fellow 85–93; Univ. of Delhi: Prof. and Head, Dept of Genetics, UDSC 93–96, Dean, UDSC 94–96, Dir 95–2006, Vice Chancellor 2006–.

Scientific Work: Major work on the breeding of mustard (*Brassica juncea*), an important oilseed crop of the dryland areas of north-western parts of India. In the initial phases, established *in vitro* techniques for the genetic manipulation of mustard and studied variability available within the mustard germplasm. A major seminal finding was that hybrids between the lines belonging to the Indian gene pool and those belonging to the east European gene pool are heterotic for yield. Extensive work on heterosis breeding has lead to the development of two hybrids, DMH 1 and DMH-11. DMH-1 is based on a novel CMS system and DMH-11 uses a pollination control mechanism based on transgenic technologies. DMH-1 shows around 25–30% increase in productivity over the best national and regional check varieties. More recent work on molecular mapping using AFLP, intron polymorphism and gene-specific markers has allowed tagging of both the qualitative (oil and meal) and quantitative trait loci in mustard. The next generation of hybrids will be Canola quality, these will contain only traces of long-chain fatty acid (erucic acid, 22:1) and less than 20 moles of glucosinolates/gm of defatted meal. Current work is on precision mapping of major QTL to further improve the yield of the hybrids.

Important Publications: **(1)** Comparative mapping of *Brassica juncea* and *Arabidopsis thaliana* using intron polymorphism (IP) markers: Homeologous relationships, diversification and evolution of A, B and C *Brassica genomes* (2008) *BMC Genomics* **9**, 113. **(2)** QTL analysis reveals context-dependent loci for seed GSL trait in the oilseed *Brassica juncea*: Importance of recurrent selection backcross (RSB) scheme for the identification of true QTL (2007) *Theor. Appl. Genet.* **116**, 77–85. **(3)** Mapping of yield influencing QTL in *Brassica juncea*: Implications for breeding of a major oilseed crop of dryland areas (2007) *Theor. Appl. Genet.* **115**, 807–817. **(4)** A passage through *in vitro* culture leads to efficient production of marker-free transgenic plants in *Brassica juncea* using Cre-lox P system (2007) *Transgenic Res.* **16**, 703–712. **(5)** A new cytoplasmic male sterility system for hybrid seed production in Indian oilseed mustard *Brassica juncea* (2006) *Theor. Appl. Genet.* **114**, 93–99.

Memberships: Fellow: NASI 94; INSA 2004; FAAS.

Awards & Distinctions: Saligram Sinha Memorial Lecture.

Periasamy, Mariappan

Elected: 1994
Position: Prof., Univ. of Hyderabad
Specialization: Organic Chemistry; Organometallics; Chiral Reagents; Renewable Resources Development
Date and Place of Birth: 6 October 1952; Srivilliputur, Tamil Nadu
Parents: D Mariappa Nadar and Krishnammal
Spouse and Children: Hemavathi; one *d*, one *s* (Mangayarkarasi, Durai Venkatesh)
Address: School of Chemistry, University of Hyderabad, Hyderabad 500 046, India
Tel. (040) 2313 4814 (O), (040) 2301 0904 (R), Mobile: 99490 93904
email: mpsc@uohyd.ernet.in

Education: Madurai Univ.: BSc 73, MSc 75; IISc, Bangalore: PhD 78.

Career: Purdue Univ., USA: Postdoc Fellow 79–82; Univ. of Hyderabad: Lecturer 82–87, Reader 87–93, Prof. 93–date.

Scientific Work: Developed several new, simple and convenient routes for the synthesis of boron and transition metal organometallic reagents. Devised a new tool for studying the mechanism of the important hydroboration reaction. Developed new, convenient methods for the synthesis of several chiral amines and aminoalchohols. Devised new methods for enhancement of optical purity of diamines and amino alcohols via preparation of homo or heterochiral hydrogen bonded aggregates.

Important Publications: **(1)** Hydroboration of prochiral olefins with chiral Lewis base-borane complexes: Relationship to hydroboration mechanism, (1987) *Chem. Commun.* 1857. **(2)** New methods of resolution and enhancement of enantiomeric excesses of 1, 1'-bi-2-naphthol (1997) *J. Org. Chem.* **62**, 4302. **(3)** Novel synthesis of acyloxyferrole complexes from alkynes and their conversion to cyclobutenediones (2004) *Organometallics*

23, 619. **(4)** Toward homogeneity of chirality via selective formation of homochiral or heterochiral aggregates (2004) *Organic Lett.* **6**, 265. **(5)** New chiral titanium complexes for enantioselective reductive cyclizations of diimines to trans-2,3-aiaryliperazines (2008) *Tetrahedron Lett.* **49**, 1233–1236.

Memberships: Fellow: INSA 2005.

Awards & Distinctions: Hussain Zaheer Science Foundation Young Scientist Award • N S Narasimhan Endowment Award • S S Bhatnagar Prize • A B Kulkarni Endowment Lectureship • D P Chakraborty 60th Birth Anniversary Award • J C Bose National Fellowship • CRSI Silver Medal.

Periasamy, Nallagounder

Elected: 1994
Position: Sr Prof., TIFR, Mumbai
Specialization: Fluorescence Spectroscopy and Applications; Physical Chemistry; Materials Chemistry
Date and Place of Birth: 30 September 1946; Thannasigoundanur, Tamil Nadu
Parents: Nallagounder and Kumarayi Ammal
Spouse and Children: Geetha; two *d*
Address: Department of Chemical Sciences, Tata Institute of Fundamental Research,
Homi Bhabha Road, Mumbai 400 005, India
Tel. (022) 2278 2383 (O), (022) 2280 4750 (R)
email: peri@tifr.res.in

Education: Madras Univ.: BSc 67; IIT Madras: MSc 69; Bombay Univ.: PhD 76.

Career: BARC, Bombay: Trainee 69–70; TIFR, Bombay: Res. Assoc. 70–76, 78–80, Fellow 80–85, Reader 85–90, Assoc. Prof. 90–95, Prof. 95–2006, Sr Prof. 2006–08; Brandeis Univ., USA, Dept of Chem.: Postdoc Res. Assoc. 77–78; Max Planck Inst. for Biophysikalische Chemie, Germany: Max Planck Stipendiat 80–82; Inst. for Spectroscopy CNR, Italy: Vis. Prof. 90–91; Univ. of California, USA: Vis. Res. Biophysicist 91–92.

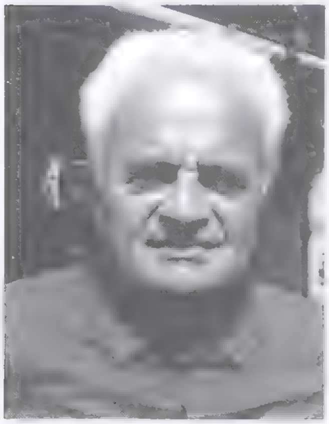
Scientific Work: Studied translational and rotational diffusive dynamics of fluorescent molecules in homogeneous and heterogeneous media using picosecond time-resolved fluorescence techniques, excited state reactions by laser flash photolysis, and applications of fluorescence dynamics to chemical and biological systems; studied J-aggregates, molecules for organic electronics.

Important Publications: **(1)** J- and H-aggregates of porphyrin-surfactant complexes: Time-resolved fluorescence and other spectroscopic studies (1998) *J. Phys. Chem.* **B102**, 1528–1538. **(2)** Diffusion controlled reactions – fluorescence quenching of cationic dyes by charged quenchers (1988) *J. Chem. Phys.* **88**, 1638–1651. **(3)** Fluorescence dynamics of dye probes in micelles (1997) *J. Phys. Chem.* **B101**, 11051–11060. **(4)** Rotational reorientation dynamics of polar dye molecular probes by picosecond laser spectroscopic technique (1990) *J. Chem. Phys.* **93**, 8498–8513. **(5)** Time-resolved area-normalized emission spectroscopy (TRANES): A novel method for confirming emission from two excited states (2001) *J. Phys. Chem.* **A105**, 1767–1771.

Memberships: Fellow: NASI 2002; INSA 2004; CRSI; ISRAPS.

Awards & Distinctions: IIT Madras Merit Prize 69 • UDCT K Venkataraman Lectureship Award 98.

Peters, Bernard*



Elected: 1954
Specialization: Cosmic Radiation; Geophysics
Date and Place of Birth: 22 December 1910; Posnan, Poland
Parents: Georg Peters and Eva
Spouse and Children: Hannah; one *s*, one *d*
Last Address: Danish Space Research Institute, Lundtoftevej, 155A, 2800 Lyngby, Denmark
***Deceased:** 2 February 1993

Education: Univ. of California, USA: PhD 41.

Career: Univ. of Rochester, New York: Asst Prof. of Phys 46–51, Prof. 51–52; TIFR, Bombay: Prof. of Experimental Phys. 52–58; Niels Bohr Inst. of Theoretical Phys: Prof. 58–67; Danish Space Res. Inst.: Dir 68–79, Dir Emeritus 79–93.

Scientific Work: Along with Bradt, discovered the presence of heavy nuclei in primary cosmic radiation in 1948. In collaboration with scientists of TIFR made pioneering contribution on characteristics of high energy collisions, primary spectrum and composition using stripped emulsion stacks flown to stratospheric altitudes. Also pioneered in the field of cosmic ray-induced radio isotopes and their application to geophysical and cosmic ray chronological studies.

Pichamuthu, Charles Solomon*

Elected: 1941
Specialization: Precambrian Geology
Date and Place of Birth: 10 March 1900; Dindigul, Tamil Nadu
Parents: Shantappa Velliah Pichamuthu
Spouse and Children: Ada; two *s*, two *d*
Last Address: Department of Geology, Andhra University, Waltair 530 003, India
***Deceased:** 18 August 1990

Education: Univ. of Mysore: BSc 21; Univ. of Glasgow, Scotland: PhD 37, DSc 46.

Career: State of Travancore: Asst Geologist 21–27; Central College, Bangalore: Asst Prof. of Geology 27–48; Govt of Karnataka, Dept of Geology: Dir 48–55; Univ. of Malaya, Singapore 58–62; Andhra Univ., Waltair: Prof. and Head of Geology.

Scientific Work: Recognised two types of charnockites – an older variety which was gneissic or granulitic formed by regional metamorphism of pre-existing schists and gneisses, and a younger one which was coarse-grained and granitic formed by anatexis. Was the first to bring to light field evidence of, charnockite in the making, in a quarry at Kabbaldurga in Karnataka. Was among the first to unequivocally show that some of the metamorphic rocks of Karnataka long considered to be originally igneous, were all sedimentary.

Memberships: Fellow: Royal Soc. of Edinburgh • President: Geology Section of Indian Science Congress, Mysore Geologists Assn.

Awards & Distinctions: President: Geol. Soc. India 72 • INSA D N Wadia Medal 84.

Pillai, Madhavan Radhakrishna

Elected: 2004
Position: Dir, Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram
Specialization: Tumour Biology; Molecular Biology; Drug Development
Date and Place of Birth: 18 August 1960; Dar-es-Salaam, Tanzania
Parents: N Madhavan Pillai and K B Jayalekshmi
Spouse and Children: Bindu S Nair
Address: Rajiv Gandhi Centre for Biotechnology, Jagathi, Thiruvananthapuram 695 014, India
Tel. (0471) 234 7973, (0471) 234 1716 (O), (0471) 273 3819 (R), Mobile: 94471 45776
email: mrpillai@rgcb.res.in

Education: Univ. of Kerala: BSc 81, MSc 84, PhD 89; Royal College of Pathologists, London: MRC Path 95, FRC Path 2003.

Career: Regional Cancer Centre, Thiruvananthapuram: JRF 85–87, Asst Prof. 91–93, Asst Prof. & Head 94–95, Assoc. Prof. & Head 95–2002; Addl Prof. & Head 2002–05; Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram: Dir 2005–; Univ. of Arizona: Res. Assoc. 89–90, Asst Prof. 90–91.

Scientific Work: Provided extensive data on tumour progression relating to human papillomavirus (HPV), described the condemned mucosa syndrome and its application for preventive and prognostic strategies including assessing tumour surgical margins and radiotherapy response. Led DBT's cervical cancer program which mapped viral subtypes in India and revealed unique Indian LI gene mutations that have serious implications for vaccine development. The study also transferred to industry, a detection system for 18 oncogenic HPVs which was then developed into a commercial kit. These contributions have recently been recognized by the International Agency for Research on Cancer (WHO) by giving the base centre for India's first HPV vaccine trial funded by the Bill & Melinda Gates Foundation. Track record in translational cancer research has been outstanding.

Important Publications: **(1)** Development of a condemned mucosa syndrome and pathogenesis of human papillomavirus associated upper aerodigestive tract and uterine cervical tumours (2000) *Exp. Mol. Pathol.* **69**, 233–241. **(2)** Expression of folate receptors and heterogeneous nuclear ribonucleoprotein E1 in women with human papillomavirus mediated transformation of cervical tissue to cancer (2003) *J. Clin. Pathol.* **56**, 569–574. **(3)** Antitumour action of curcumin in human papillomavirus associated cells involves down-regulation of viral oncogenes, prevention of NFkB and AP-1 translocation and modulation of apoptosis (2006) *Mol. Carcinogen.* **45**, 5, 320–332. **(4)** Radiosensitising effects of plumbagin in cervical cancer cells is through the modulation of apoptotic pathway (2008) *Mol. Carcinogen.* **47**, 22–33. **(5)** Structure-function relationship of inhibitory smads: Structural flexibility contributes to functional divergence (2008) *Proteins: Structure, function and bioinformatics* **71**, 4, 1853–1862.

Memberships: Fellow: NASI 2005.

Awards & Distinctions: National Bioscience Career Award, DBT • Indian Council of Med. Res. Award for Outstanding Cancer Res.

Pillai, Valliyil Narayanan Rajasekharan

Elected: 1992
Position: Vice Chancellor, IGNOU, New Delhi
Specialization: Bio-organic Chemistry; Synthetic Organic Chemistry; Macromolecular Science
Date and Place of Birth: 20 October 1949; Chengannur, Kerala
Parents: Narayana Pillai and Thankamma
Spouse and Children: Geetha; one *s*, one *d*
Address: Indira Gandhi National Open University, Maidan Garhi, Saket, New Delhi 110 068, India
Tel. (011) 2953 2707, (011) 2953 2484 (O), (011) 2649 3938 (R), Mobile: 98109 82888
email: vco@ignou.ac.in, rajasekharpillai@gmail.com

Education: Univ. of Kerala: BSc 69, MSc 71, PhD 74.

Career: Univ. of Kerala, Trivandrum: UGC Res. Fellow 71–73, CSIR Res. Fellow 73–74; Univ. of Calicut, Kerala, Dept. of Chem.: Lecturer 74–78, Reader 82–83; Univ. of Tubingen, Germany, Inst. of Organic Chem.: Postdoc Fellow 78–79; Univ. of Mainz, Germany, Inst. of Organic Chem.: DFG-Postdoc Assoc. 79–82; Mahatma Gandhi Univ., Kerala: Co-ordinator and Vis. Prof. 83–86, Prof. and Head of Polymer Chem. 86–88, Prof. and Dir of School of Chemical Sci. 88; Univ. Grants Commission (UGC), New Delhi; Chmn and Vice-Chmn. Natl Assessment and Accreditation Council (NAAC), Bangalore: Dir; Mahatma Gandhi Univ., Kottayam, Kerala: Vice-Chancellor; Cochin Univ. of Sci. and Technol. Vice-Chancellor; School of Chemical Sci.: Founder-Dir Dean of Faculty of Sci., Controller of Examinations; Dir of College Development Council; School of Professional Distance Education: Founder-Dir. Employment and Information Guidance Bureau of the Mahatma Gandhi Univ.: Chief; IGNOU, New Delhi: Vice Chancellor.

Scientific Work: Designed several photoremovable protective and activative groups for organic synthesis. Designed photoremovable soluble and insoluble polymeric supports for peptide synthesis. Designed, optimized and developed a totally indigenous and cost-effective protocol for the synthesis of model peptides and bioactive protein sequences in high purity and yield. Correlated macromolecular structural parameters with the dynamics of organic reactions occurring in the three-dimensional polymeric gel matrices. Carried out synthetic, structural and conformational studies on synthetic and naturally occurring peptide and protein sequences including thioredoxin and pardaxin sequences. Designed and developed polymeric reagents and metal ion selective polymeric supports.

Memberships: Hon. Sr Fellow: JNCASR, Bangalore.

Awards & Distinctions: MRSI Lecture Award 96 • R R Varma Foundation Best Teacher Award 2006 • M V Pylee Award for the top academician of India 2007 • ISCA Presidential Gold Medal 2008 • Indian Chemical Soc. Award.

Pisharoty, Pisharoth Raman*

Elected: 1957
Specialization: Atmospheric Sciences; Remote Sensing; Hydrology
Date and Place of Birth: 10 February 1909; Kollengode, Kerala
Parents: Gopala Vadhyar and Lakshmi
Spouse and Children: Droupady; one *s*, two *d* (Narayanan, Rema, Jaya)
Last Address: E-1/2, Chaitraban Residency, Office ITI Road, Aundh, Pune 411 007, India
***Deceased:** 24 September 2002

Education: Univ. of Madras: BA Hons 31, MA 36; Univ. of California, USA: MS 53, PhD 54.

Career: Loyola College, Madras: Lecturer 32–41; IISc, Bangalore: Res. Fellow 41–42; Govt of India, India Meteorology Dept: Asst Meteorologist 42–44, Meteorologist Pune 45–47, Delhi Main Forecasting Office 48–51, Poona Weather Sec. 54–55; Colaba & Alibag Magnetic Observatories, Bombay: Dir 59–62; IITM, Pune: Dir 62–67; PRL, Ahmedabad: Sr Prof. 67–76, Prof. Emeritus 76–92; Remote Sensing Dn (SAC): Sr Prof. & Dir 72–75.

Scientific Work: Worked on the various properties of light waves and published papers on laminar diffraction and the Becke phenomenon, visibility of ultrasonic waves, and Young's modulus of diamond. Found that mid-latitude low-pressure systems moving eastward across the northern Himalaya cause a break in the monsoon rains over a major part of India; recurvature of monsoon depressions in late August and September towards western Himalaya, leading to very heavy rains there. Concluded that the Indian summer monsoon is a delayed response to the inadequate poleward transport of heat in the northern hemisphere during the antecedent winter; and a significant part of the moisture for an active monsoon period arises through evaporation from the Arabian Sea.

Important Publications: **(1)** Quantum theory of X-ray reflection (1941) *Nature* 1947. **(2)** On the geometry of the quantum reflection of X-rays in diamond (1941) *Proc. Indian Acad. Sci.* **A14** 56–69. **(3)** Air masses in tropical cyclonic storms from radiosonde data (1948) *Curr. Sci.* **17** 205–207.

Memberships: Fellow: INSA 78; Royal Meteorological Soc; American Meteorological Soc. • Member: Indian Meteorological Soc.

Awards & Distinctions: Chmn: Global Atmos. Res. Progr. 69–77 • Padma Shri 70 • Vice President: Intl Assn Meterol. Atmos. Phys 72–79 • Govt of Kerala Ponnada 87 • C V Raman Centenary Medal 88 • Indian Meteorology Organization Prize 89 • Intl Meteorol. Prize 89 • President: Indian Meteorol. Soc.

Pitchappan, Ramaswamy

Elected: 2003
Position: Regional Dir., The Genographic Project, School of Biological Sci., Madurai Kamaraj Univ.
Specialization: Human Immunogenetics; Immunology of Infectious Diseases; Human Genomics
Date and Place of Birth: 2 April 1946; Shanmuganathapuram, Tamil Nadu
Parents: R M Ramaswamy and R M Deivanai
Spouse and Children: P Sornavalli; two *s*, one *d*
Address: The Genographic Project, School of Biological Sciences, Madurai Kamaraj University,
Madurai 625 021, India
Tel. (0452) 245 8418 (O), (0452) 256 9889 (R), Mobile: 93440 69889
email: pitchappanrm@yahoo.co.uk, rmpitchappan@gmail.com

Education: Madras Univ.: BSc 68; Madurai Univ.: MSc 70, PhD 75.

Career: Alagappa College, Karaikudi: Demonstrator 70–71; MKU: Lecturer 76–79, Reader 79–87, Prof. 87–95, Prof. & Head, Immunology Sec. 95, Sr Prof. & Head 97–2005, Co-ordinator School of Biological Sc. 2005–06, Prof. Emeritus 2006–.

Scientific Work: Significant contributions are genome predisposing for leprosy; First emigration of people out of Africa; Innate nature of cell mediated and humoral immunity; molecular basis of HLA and KIR polymorphisms and predisposition to infectious diseases. Worked on human immunogenetics, offered renal and bone marrow transplantation matching services from a university set up and investigated immunogenetics and genomic diversity in health and disease status in India. Undertook many international collaborations, developed standards for HLA employing state of the art DNA technologies. Currently heads the Indian Centre of the global The Genographic project, the one of the ten centres in the world and the project, the one of the ten centres in the world and the only one from India studying, the migration and evolution of man in India.

Important Publications: **(1)** Genomic implications of Dravidian cultural evolution (2008) *Proc. Intl. Conf. First Great Migrations of People*, UNESCO, Paris, 60–67 pp., 169–70 pp. **(2)** Unusual selection on the KIR3DL1/S1 natural killer cell receptor in Africans (2007) *Nature Genetics* **39**, 1092–1099. **(3)** *Mycobacterium bovis* BCG scar status and HLA class II alleles influence purified protein derivative-specific T-cell receptor vB expression in pulmonary tuberculosis patients from southern India (2003) *Infection & Immunity* **71**, 8, 4544–53. **(4)** A major susceptibility locus for leprosy in India maps to chromosomes 10p13 (2003) *Nature Genetics* **27**, 439–41. **(5)** MHC class II association with pulmonary tuberculosis in South India (1999) *Tubercle & Lung Diseases* **94**, 5, 309–317.

Awards & Distinctions: Jaycees Outstanding Young Person Award 85 • *Lancet's* Investigator's Award • H M Bhatia Oration Award.

Pitke, Madhukar Vishwanath

Elected: 1986
Specialization: Electronics; Telecommunication and Information Technology; Technology Transfer; Wireless Communication
Date and Place of Birth: 31 March 1936; Bijapur, Karnataka
Parents: Vishwanath and Laxmi
Spouse and Children: Medha; two children
Address: Buniyad, Yashodham A2–15, Goregaon (East), Mumbai 400 063, India
Tel. (022) 2841 5252 (O), (022) 2841 5252 (R), Mobile: 99670 31266
email: pitke@vsnl.com

Education: Karnatak Univ.: BSc Hons 56; Univ. of Bombay: MSc 58, PhD 72.

Career: TIFR, Computer Group: Res. Sci. 59–60, Res. Assoc. 60–63, Res. Fellow 65–66, Fellow 66–73, Res. Sci. 73–78, Prof. and Head 78–81, Dir CDOT 81–2001; Axes Technologies, Mumbai: Vice Chmn 2001–07; Univ. of Pisa, Italy: Vis. Sci. 63–64; Max-Planck Inst., Germany: Vis. Sci. 64–65; CICESE, BC Mexico; Vis. Prof. 81–82; Centre for Development of Telematics: Founder Dir 84–90; CMU: Vis. Prof. 93; IIIT, Bangalore: Adj Prof. 2005–.

Scientific Work: Early work involved novel applications of transistorized and integrated circuits in computers. Research in thin magnetic film memories relating to non-destructive readout, etc. and the discovery of anamalous behaviour for novel application widely recognized. Contributions to synchronization, signal processing and system architecture well known. Developed ideas for a rural switch based on ADM-VHF channels, Radiotex, an audio-visual broadcasting system based on narrow band channels with microprocessor for picture regeneration. Helped organize and establish the Centre for Development of Telematics; directing technology development of a family of modern digital electronic switching systems and related products. Guided design and implementation of a large parallel processor with unique architecture for weather forecasting. Guided successful development of telecom switching technology: 30+ million lines deployed.

Important Publications: Several in circuit design, telecom switching, architecture, signal processing, etc.

Memberships: Fellow: IEEE; IETE; Maharashtra Acad. of Sci. • Member: Pacific Telecommunication Council of USA.

Awards & Distinctions: IEEE Computer Soc. Meritorious Service Award 89 • CDOT Exemplary Leadership Award 92.

Pradeep, Thalappil

Elected: 2009
Position: Prof., IIT Madras
Specialization: Molecular and Nanoscale Materials; Nanoscience and Nanotechnology; Molecular Surfaces Ion Scattering; Instrumentation
Date and Place of Birth: July 8, 1963; Panthavoor, Kerala
Parents: Thalappil Narayanan Nair and Kurjulakshmi Amma
Spouse and Children: Subha; one *s*, one *d* (Raghu, Laya)
Address: Department of Chemistry and Sophisticated Analytical Instrument Facility, Indian Institute of Technology Madras, Chennai 600 036, India
Tel. (044) 2257 4208 (O), (044) 2257 6208 (R), Mobile: 94447 64408
email: pradeep@iitm.ac.in; URL: http://www.dstuns.iitm.ac.in/pradeep-research-group.php

Education: Calicut Univ.: BSc 83, MSc 85; IISc: PhD 91.

Career: Lawrence Berkeley Lab., Univ. of California, Berkeley and Purdue Univ., West Lafayette, Indiana: Post-doc 92–93; IIT Madras: Visiting Faculty, 93–95, Asst Prof. 95–2000, Assoc. Prof. 2000–03, Prof. 2004–.

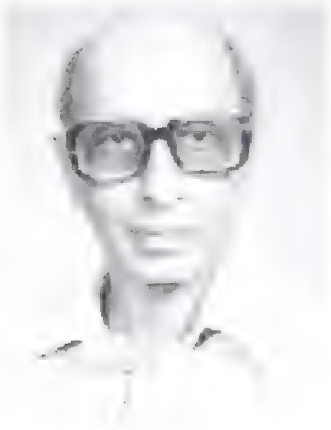
Scientific Work: Prominent early contributions include the very first vibrationally resolved photoelectron spectrum of Ar_2 and determination of its spectroscopic constants, advancement of low energy reactive ion scattering spectroscopy as an analytical tool, discovery of novel transition metal ion chemistry and the elusive NH_2^+ molecular ion. Determined adsorbate structures of a number of molecules, studied the evolution of monolayer dynamics in protected nanoparticles and explored their three-dimensional superstructures. Among contributions to nanoscience are the discovery of a novel reaction of halocarbons with metal nanoparticles, its use in pesticide removal from drinking water and the application of this technology for the development and commercialization of a water filter which is the first nanotechnology product for drinking water purification. Made new light emitting sub-nano clusters of gold and silver. Group has shown that monolayers are rotationally frozen on nanoparticle surfaces and do not exist in a rotator phase as believed earlier. Found transverse electrokinetic effect in which a potential is generated on nanoparticle assemblies anchored on surfaces, when a liquid flows over them. Showed that metal nanoparticle-metallic carbon nanotube composites show visible light emission as the nanotubes undergo a metal-semiconductor transition in the composite. Showed that the equilibrium constant of the prototypical proton NH_4Cl, is orders of magnitude lower on ice. Most recently, found that diffusion of chemically similar molecules through ultra thin ice films exhibits several surprises.

Important Publications: **(1)** Fluorescent gold nanoparticle superlattices (2008) *Adv. Mater.* **20**, 4719. **(2)** Structural reorganization on amorphous ice films below 120 K revealed by near-thermal (~1 eV) argon ion scattering (2008) *J. Phys. Chem.* **C112**, 5129–5135. **(3)** Electric field assisted growth of highly uniform and oriented gold nanotriangles on conducting glass substrates (2008) *Adv. Mater.* **20**, 980. **(4)** Visible fluorescence induced by the metal-semiconductor transition in composites of carbon nanotubes with noble metal nanoparticle composites (2007) *Phys. Rev. Lett.* **99**, 167404. **(5)** Flow induced transverse potential across an assembly of gold nanoparticles (2005) *Phys. Rev. Lett.* **95**, 164501.

Memberships: Member: CRSI; MRSI; Indian Neutron Scattering Soc.; Indian Assn of Chemistry Teachers.

Awards & Distinctions: Rajiv Gandhi Award 95 • IUPAC Young Affiliate 96 • Tamil Nadu Scientist Award 2000 • MRSI Medal 2002 • B M Birla Science Prize 2003 • CRSI Bronze Medal 2004 • DST National Research Award 2008 • S S Bhatnagar Prize 2008.

Pradhan, Suresh Krishnarao*



Elected: 1986
Specialization: Organic Chemistry; Stereochemistry; Reaction Mechanism and Synthesis; Natural Products
Date and Place of Birth: 6 September 1929; Nagpur, Maharashtra
Parents: K N Pradhan and Dwarka
Spouse and Children: Sumati; two *d*
Last Address: Flat A-32, Building No. 11, Jankalyan Nagar, Malad (W), Bombay 400 095, India
***Deceased:** 23 May 2002

Education: Univ. of London, UK: BSc 52, MSc 54, PhD 58, DIC 58.

Career: NCL, Pune: Jr Sci. Offr 59–61; Univ. of California, Los Angeles, USA: Res. Assoc. 61–62; Worcester Foundation for Experimental Biology, USA: Sci. 62–64; Shivaji Univ., Kolhapur, Dept of Chem.: Head 64–65; Indian Inst. of Chemical Technol., Hyderabad: Project Leader & Sci. 65–70; Univ. of Bombay, Dept of Chemical Technol., Pharmaceuticals Dn: Prof. & Head 70–89.

Scientific Work: Helped in elucidating the structures of cartol, allogeigeric acid and diospyrin. Deduced the structure of nimbin utilising experience with limonin. Proved that the alkaloid atisine was a mixture of two rapidly interconverting configurational isomers. Introduced naphthalene sodium as an alternative single electron transfer reagent to generate radical-anions from ketones to achieve the Stork reduced cyclization. Mechanism established involved the novel postulate that the radical-anion attacks the triple bond as a radical. Not only provided proof that Barton's discarded dianion mechanism for metal/ammonia reductions is correct but also explained the stereochemistry using frontier molecular orbitals to predict the direction of pyramidalization of the intermediate radical-anions.

Memberships: Member: Sigma Xi; New York Acad. of Sciences; London Chemical Soc.

Pradhan, Trilochan

Elected: 1974
Position: Emeritus Prof., Inst. of Phys., Bhubaneswar
Specialization: Elementary Particles; High Energy Physics; Plasma Physics; Atomic Physics
Date and Place of Birth: 3 January 1929; Ghanashalia, Orissa
Parents: Ramachandra Dakshinaray and Ahalya
Spouse and Children: Sanjukta; one *s*, one *d*
Address: Institute of Physics, Sachivalaya Marg, Bhubaneswar 751 005, India
Tel. (0674) 230 1058 (O), (0674) 230 0962 (R)
email: pradhan@iopb.res.in

Education: Utkal Univ., Cuttack: BSc Hons 49; BHU, Varanasi: MSc 51; Univ. of Chicago, USA: PhD 56.

Career: Ravenshaw College, Cuttack: Lecturer in Phys 51–62; Saha Inst. of Nuclear Phys, Calcutta: Assoc. Prof. 62–67, Prof. 67–74; Inst. of Phys, Bhubaneshwar: Dir 74–89, Prof. Emeritus 89–date; Utkal Univ., Bhubaneshwar: Vice-Chancellor 89–92.

Scientific Work: Noted the existence of derivative delta terms in current commutators which became very important in current algebra approach in particle physics. Worked on the criteria of compositeness of elementary particles in the framework of solvable quantum field theory models, on divergence-free quantum electrodynamics and certain aspects of the theory of weak interactions. Has worked on gauge interactions between spins of elementary particles that results from the local Lorentz group in a curvature-free space and gives a mechanism for dynamical measurement of spin through gauge fields. Gave a non-perturbative approximation method for proton–hydrogen charge transfer problem. Used Feynman diagram method for the harpoon reaction between an alkali atom and a halogen molecule; theoretical treatment of Landau damping of electromagnetic waves in a magneto-plasma near the cyclotron resonance frequency; derived Maxwell equations (wave optics) from Fermat's principle (ray optics).

Memberships: Member: Indian Physics Assn.

Awards & Distinctions: Meghnad Saha Award 80 • Padma Bhushan 90.

Prakasa Rao, Bhagavatula Lakshmi Surya

Elected: 1992
Position: Homi J Bhabha Chair Prof., Univ. of Hyderabad
Specialization: Mathematical Statistics
Date and Place of Birth: 6 October 1942; Porumamilla, Andhra Pradesh
Parents: Rama Moorthy Bhagavatula and Saradamba
Spouse and Children: Vasanta; three s
Address: Department of Mathematics and Statistics,
University of Hyderabad, Hyderabad 500 046, India
Tel. (040) 2313 4010, (040) 2301 1469 (O), (040) 2301 2135 (R), Mobile: 99491 85041
email: blsprao@gmail.com; URL: www.isid.ac.in/~statmath/homepageblsp/index.html

Education: Andhra Univ.: BA Hons 60; ISI, Calcutta: M.Stat. 62; Michigan State Univ., USA: PhD 66.

Career: Univ. of California, Berkeley: Acting Asst Prof. 66–67; Univ. of Illinois, USA: Vis. Asst Prof. 67–68; IIT Kanpur: Asst Prof. 68–71, Assoc. Prof. 71–76; Univ. of Montreal, Canada: Res. Attache 73–75; ISI, New Delhi: Prof. 76–92, Distinguished Sci. 95–2004; Univ. of Wisconsin, Madison: Vis. Prof. 79–80; Univ. of California, Davis: Vis. Prof. 86–88; ISI, Calcutta : Distinguished Sci. 92–95, Dir 92–95; Univ. of Iowa, Vis. Prof. 99–2000; Univ. of Hyderabad: Jawaharlal Nehru Chair Prof. 92, Vis. Prof. (UPE) 2004–06, Jawaharlal Nehru Chair Prof. 2006–08, Homi J Bhabha Chair Prof. 2008–; ISI, Emeritus Prof. 2004–09.

Scientific Work: Studied the asymptotic distribution of the maximum likelihood estimator for location of the cusp for families of densities which include double exponential densities. Showed that the estimators are hyperefficient. With regard to estimation for unimodal density and density with monotone failure rate, developed the basic limiting distribution theory for the asymptotic distribution of the maximum likelihood estimators which is presently known as cube root asymptotics. Established that classical results on the rates of convergence and asymptotic distributions for the maximum likelihood and Bayes estimators continue to hold for discrete time stationary Markov processes and for a class of diffusion processes. Proved, that the posterior density converges to the normal density in mean for smooth prior distribution even in the case of discrete time-stationary Markov processes, thereby extending the classical Bernstein Von–Mises theorem. Contributed extensively to the parametric and non-parametric asymptotic theory of statistical inference for stochastic processes and limit theorems and characterization problems in probability theory. It is now believed that long range dependence is present in some time series such as hydrological data and traffic patterns of packet flows in high speed data networks such as the internet. Fractional Brownian motion is useful in modelling such data. Worked in estimation of parameters for processes driven by fractional Brownian motion.

Important Publications: **(1)** *Statistical inference for stochastic processes* (1980) Academic Press, London. **(2)** *Nonparametric functional estimation* (1983) Academic Press, Orlando. **(3)** *Asymptotic theory of statistical inference* (1987) Wiley, New York. **(4)** *Statistical inference for diffusion type processes* (1999) Arnold, London and Oxford Univ. Press, New York. **(5)** *Semimartingales and their statistical inference* (1999) Chapman and Hall, London and CRC Press, Boca Raton. **(6)** *Identifiabilty in stochastic models: Characterizations of probability distributions* (1992) Academic Press, New York.

Memberships: Fellow: Inst. of Mathematical Statistics USA; INSA 84; NASI 93 • Chmn: Mathematics and Statistics Res. Committee, CSIR • Elected Member: International Statistical Institute.

Awards & Distinctions: S S Bhatnagar Award 82 • Outstanding Alumni Award, Michigan State Univ. • P V Sukhatme National Award.

Prakash, Vishweshwaraiah

Elected: 1995
Position: Dir, CFTRI, Mysore; Chief Co-ordinator, United Nations Univ.
Specialization: Physical Biochemistry; Chemistry of Macromolecules; Biophysics of Proteins; Enzymes and Thermodynamics; Food Chemistry; Foods and Nutrition; Food Biotechnology
Date and Place of Birth: 23 November 1951; Mysore
Parents: K N Vishweshwaraiah and H S Gangamma
Spouse and Children: Jamuna; two *s* (Kiran, Vaibhav)
Address: Central Food Technological Research Institute, Cheluvamba Mansion,
Mysore 570 220, India
Tel. (0821) 251 7760 (O), (0821) 251 0054 (R)
email: prakash@cftri.com; URL: www.cftri.com

Education: Univ. of Mysore: BSc 70, MSc 72, PhD 76.

Career: CFTRI: JRF 72–74, SRF 74–76, Pool Offr 81–82, Sci. 82–93, Head Protein Technology 93–94, Dir 94–; Baylor College of Medicine, USA: PhD 76–78; Brandeis Univ., USA: Res. Assoc. 78–80, Vis. Prof. 89–90.

Scientific Work: Contributions have profound impact on the understanding of protein and enzyme structural stability. Work on the mechanism of ligand–protein interactions has given an indepth analysis to the nature of the forces of these interactions. At a fundamental level, the knowledge of the behaviour of the proteins and enzymes in various solutions and its thermodynamics has a large bearing on the predictability of behaviour of a large number of proteins worked upon under a variety of solution conditions. The discovery of structural homology amongst seed proteins opens up the very basic question of sequence homology in seed proteins in general and has a powerful impact for further work in this area by many groups in the country and abroad. Conducting research in the area of biophysical chemistry of macromolecules, pioneered work on the homology of seed proteins and their use through enzymatic processes for nutritional increment of convenience foods. Established the Advanced School of Protein Chemistry and Technology at CFTRI and heads major projects on enzymes and proteins relevant to food industries and value addition through by-product utilization.

Important Publications: (1) Physicochemical properties of oilseed proteins (1986) *CRC Crit. Rev. Biochem.* **20**, 265–363. **(2)** *Leafy spices* (1990) CRC Book, CRC Press Inc., Florida, USA. **(3)** Calculation of protein partial specific volume in 8M urea solution (1985) *Methods Enzymol.* (Enzyme Structure, Part F) **117**, 53–60. **(4)** Criteria for distinguishing self association in velocity sedimentation (1986) *Methods Enzymol.* (Enzyme Structure, Part K) **130**, 3–6. **(5)** Stabilization of structure of monomeric and multimeric protein, Role of cosolvents, Part B (2003) *Proc. Indian Natl Sci. Acad.* **B69**, 4, 371–392.

Memberships: Fellow: AFST 94; NAAS 98; IUFOST 98; NASI 2002; INAE 2003; RSC 2003; IFT 2008 • President: International Acad. of Food Science and Technology, Canada; Nutrition Soc. of India.

Awards & Distinctions: Golden Jubilee Award Univ. of Mysore • Sarma Memorial Award • Laljee Godhoo Smarak Nidhi Award • S S Bhatnagar Prize • Karnataka Rajyotsava Award • 50th Anniversary of India's Independence Golden Jubilee Award • V Subramanyan Industrial Achievement Award • CFTRI Best Alumnus Award • Soilendra Krishna Mitra Memorial Award • 38th B C Guha Memorial Lecture Award and Citation • DuPont Protein Technologies International Award • FICCI Award • Kashalkar Memorial Award• Padma Shri • CIFT 6th Golden Jubilee Commemorative Talk Award • NSI Nineteenth Srikantia Memorial Lecture Award • NFI C Ramachandran Memorial Lecture Award.

Prasad, Dipendra

Elected: 1995
Position: Prof., TIFR, Mumbai
Specialization: Automorphic Forms; Number Theory
Date and Place of Birth: 22 March 1960; Ghazipur, Uttar Pradesh
Parents: Ram Krishna Prasad and Lakshmi Devi
Address: School of Mathematics, Tata Institute of Fundamental Research, Homi Bhabha Road,
Mumbai 400 005, India
Tel. (022) 2278 2236 (O), (022) 2280 4785 (R)
email: dprasad@math.tifr.res.in, dipendra_pd@yahoo.com

Education: Bombay Univ.: BSc 78; IIT Kanpur: MSc 80; Harvard Univ.: PhD 89.

Career: TIFR, Mumbai: Res. Scholar 80–85, Res. Asst 89–90; Fellow 90–93; Reader 93–97; Prof. 2002–; Harvard Univ., USA: Graduate Student 85–89; Mehta Res. Inst., Assoc. Prof. 94–97; Prof 97–2004.

Scientific Work: Work has mostly been related to understanding decompositions of groups over local fields when restricted to subgroups in terms of certain arithmetic data. Several results obtained or conjectured to exist (some in collaboration with B H Gross) bring out the importance of epsilon factors for such questions. Interested in Weil representations and theta liftings and has interpreted the lifting of representations obtained via Langlands principle of functionality and has also obtained branching laws using the seesaw duality in Weil representations.

Memberships: Member: Inst. for Advanced Study, Princeton 92–93, 2006–2007 • Fellow: NASI 97; INSA 2003.

Awards & Distinctions: Sloan Fellowship, Harvard 88–89 • NSERC Fellowship of the Canadian Govt 93 • B M Birla Prize 94 • Swarnajayanti Fellowship 99 • S S Bhatnagar Award 2002 • ISC Ramanujam Award 2004.

Prasad, Gopal

Elected: 1984
Position: Raoul Bott Prof. of Mathematics, The Univ. of Michigan
Specialization: Lie Groups; Algebraic Groups
Date and Place of Birth: 31 July 1945; Ghazipur, Uttar Pradesh
Parents: Ram Krishna Prasad and Lakshmi Devi
Spouse and Children: Indu Devi; one *s*, one *d* (Anoop, Ila Rani)
Address: Department of Mathematics, The University of Michigan, Ann Arbor, Michigan 48109-1043, USA
Tel. (1734) 764 0372 (O), (1734) 761 8470 (R)
email: gprasad@umich.edu

Education: H D Jain College, Arrah: BSc Hons 63; Patna Univ.: MSc 65; Univ of Bombay: PhD 76.

Career: Yale Univ., USA and Inst of Adv. Study, USA: Postdoc Res. 72–74, 80–81, 87–88; TIFR, Bombay: Prof. 84–92; Univ. of Michigan, Dept of Maths: Prof. 92–08; Raoul Bott Chair 2008–.

Scientific Work: Work related to strong rigidity of lattices in real and p-adic groups; proof of the strong approximation, and computation of the covolume of S-arithmetic groups. Determined the rank of semi-simple groups from the structure of a lattice, computed the congruence kernel and the second cohomology of semi-simple groups, and worked on the Kneser–Tits problem. Proved finiteness theorems for S-arithmetic groups, and the existence of minimal K-types for p-adic groups. Classified quasi-reductive group schemes, pseudo-reductive groups, and take projectives planes. Has investigated weakly commensurable arithmetic groups and isospectral locally symmetric spaces.

Important Publications: **(1)** Topological central extensions of semi-simple groups over local fields (1984) *Ann. Math.* **119**, 143–268. **(2)** Volumes of *S-arithmetic quotients of semi-simple groups* (1989) *Publ. Math. IHES* **69**, 91–117. **(3)** Computation of the metaplectic kernel (1996) *Publ. Math. IHES* **84**, 91–187. **(4)** Fake projective planes (2007) *Inventiones Math.* **168**, 321–370. **(5)** Weakly commensurable arithmetic groups and isospectral locally symmetric spaces (2009) *Publ. Math. IHES* **109**, 113–184.

Memberships: Fellow: INSA 82.

Awards & Distinctions: S S Bhatnagar Award.

Prasad, Guntupalli Veera Raghavendra

Elected: 2003
Position: Prof., IISER, Kolkata
Specialization: Vertebrate Palaeontology; Evolution of Mesozoic Mammals in India; Cretaceous Palaeobiogeography of India
Date and Place of Birth: 22 November 1958; Guntur, Andhra Pradesh
Parents: G Hanumantha Rao and Hymavati
Spouse: G Rajya Lakshmi
Address: Indian Institute of Science Education and Research (IISER-K), Mohanpur campus, Post BCKV Main Campus, Mohanpur 741 252, India
Tel. (O), 033-25025186 (R), Mobile: 094326 67186
email: pguntupalli@rediffmail.com, guntupalli.vrprasad@gmail.com

Education: Vikram Univ., Ujjain: BSc 79, MSc 81; Panjab Univ., Chandigarh: PhD 86.

Career: Punjab Univ.: Lecturer 86; Univ. of Jammu: Lecturer 86–92, Reader 92–98; Prof. 98–2008; IISER-Kolkata: Prof. 2008–; PDF French Govt: 90–91; INSA Royal Soc. Exchange Fellowship 99–2000; PDF, DST-DAAD Vis. Sci., Humboldt Univ. Berlin 2002; PDF, Museum Natl d'Histoire Naturelle, Paris 2008; IISER: Prof. 2008.

Scientific Work: Made valuable contributions to our understanding of vertebrate evolution, particularly Mesozoic mammals of India, through many discoveries from the Jurassic and Cretaceous deposits. The discovery of archontans and ungulate mammals from the Cretaceous of India extended their stratigraphic range back in time and supported the long fuse model of mammalian diversifications. It also favoured India as a possble centre of origin for many ordinal groups. Further, the discovery of gondwanathere mammals in the Cretaceous of India attests to the presence of a terrestrial route between the southern continents in the late Cretaceous at a time when India was drifting rapidly northwards enabling the dispersal of this South American group of mammals.

Important Publications: **(1)** A Cretaceous hoofed mammal from India (2007) *Science* **318**, 937. **(2)** A new late cretaceous gondwanatherian mammal from Central India (2007) Proc. Indian Natl Sci. Acad. **73**, 1, 17-24. **(3)** Cosmopolitanism among Gondwanan late Cretaceous mammals (1997) *Nature* **390**, 504–507. **(4)** Implications of the infra- and inter-trappean biota from the Deccan, India, for the role of volcanism in cretaceous – tertiary extinctions. (1995) *J. Geol. Soc. London* **150**, 289–296. **(5)** First cretaceous mammal from India (1988) *Nature* **332**, 6164, 638–640.

Memberships: Member: Soc. of Vertebrate Paleontology, Chicago; Geological Soc. of India; Palaeontological Soc. of India; Electron Microscope Soc. of India.

Awards & Distinctions: National Mineral Award • UGC Research Award 2002 • L Rama Rao Birth Centenary Award • S S Bhatnagar Prize 2003 • Soc. of Vertebrate Paleontology Preparator's Grant Award.

Prasad, Malur Ramaswamyiyengar Narasimha*

Elected: 1975
Specialization: Reproductive Physiology; Regulation of Fertility
Date of Birth: 1 May 1923; Bangalore
Parents: M L Ramaswamy Iyenger and Yadugiriamma
Spouse and Children: Nagarathna; one *s*, one *d*
Last Address: 392, III Block, 2nd Cross, 13th Main Road, Koramangala, Bangalore 560 034, India
***Deceased:** 7 October 1987

Education: Univ. of Mysore: PhD; Univ. of Wisconsin, USA: PhD 58.

Career: Central College, Mysore Univ.: Lecturer 45–55; Univ. of Wisconsin, USA: 55–58; Univ. of Delhi: Prof. of Zoology 59–77; Development & Res. Training in Human Reproduction, Switzerland, WHO; Sci. 77–83; IISc, Bangalore, Dept. of Biochem: 85–87.

Scientific Work: Studied the reproductive endocrinology of seasonal breeders like the garden lizard and palm squirrel. Studied male reproductive physiology, in particular studies on epididymal maturation of sperms and general epididymal physiology of the rodent and the monkey. Using available antiandrogens, arrived at an androgen requirement for maintenance of varying functions of reproductive accessory tissues. Led to suggesting the use of antiandrogen cyproterone acetate as a contraceptive agent in man.

Memberships: Fellow: INSA 70 • Member: ICMR Scientific Advisery Committee.

Awards & Distinctions: FICCI Award 73 • GOI National Family Planning Award 74 • Jagdish Chandra Bose Award 75 • Fulbright Fellowship.

Prasad, Phoolan

Elected: 1985
Position: Hon. Prof., IISc, Bangalore
Specialization: Theory of Wave Propagation; Partial Differential Equations; Fluid Mechanics
Date and Place of Birth: 1 January 1944; Khejuri, Ballia, Uttar Pradesh
Parents: L P Bhagat and Mangali Devi
Spouse and Children: Mandra; one *s*, one *d* (Amritanshu, Deepika)
Address: Department of Mathematics, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2293 3205, (080) 2293 2267 (O), (080) 2337 1039 (R), Mobile: 94484 61299
email: prasad@math.iisc.ernet.in; URL: http://math.iisc.ernet.in/~prasad/

Education: Univ. of Calcutta: BSc Hons 62, MSc 64; IISc, Bangalore: PhD 68.

Career: IISc, Bangalore: Lecturer 67–72, Asst Prof. 72–77, Assoc. Prof. 77–82, Prof. 82–2005; MSIL Special Chair 94–96, Chmn Dept of Mathematics 96–2000, Prof. in Super Time Scale 2005–06.

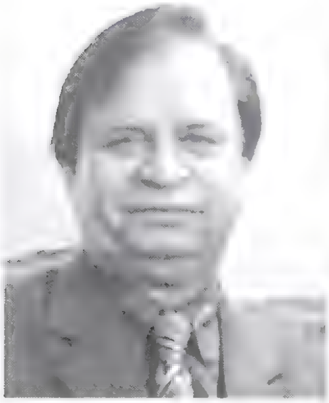
Scientific Work: Developed methods used to prove nonlinear instabilities of a number of self-similar flows and the neutral stability of multi-dimensional transonic flows. Approximated hyperbolic system in the neighbourhood of a bicharacteristic curve. Studied the kinematics of a shock front and developed shock ray theory, which gives not only a deep understanding of mathematical structure of conservation laws on the shock manifold but also a practical method of solution of shock propagation problems. Proved existence of a new type of waves on the interface of a clear liquid and a mixture in a sedimentation process beneath an inclined wall, verified experimentally and theoretically about five years later at Stanford. Formulated the kinematical conservation laws giving evolution of a moving surface and has also given a new theory for sonic boom.

Important Publications: **(1)** Nonlinear wave propagation on an arbitrary steady transonic flow (1973) *J. Fluid Mech.* **57**, 721–737. **(2)** Riemann problem for kinematical conservation laws and geometrical features of nonlinear wavefronts (2004) *IMA J. Appl. Math.* **69**, 391–420. **(3)** Formulation of the problem of sonic boom by a maneuvering aerofoil as a one parameter family of Cauchy problems (2006) *Proc. Indian Acad. of Sci.* **116**, 97–119. **(4)** *Partial differential equations* (1985) Wiley Eastern Ltd. **(5)** *Nonlinear hyperbolic waves in multi-dimensions* (2001) Chapman & Hall/CRC, New York.

Memberships: Fellow: NASI 76; INSA 87; Ramanujan Mathematical Soc.

Awards & Distinctions: S S Bhatnagar Award 83.

Prasad, Rajendra



Elected: 2000
Position: Prof., Rector, JNU, New Delhi
Specialization: Membrane Biology; Yeast Genetics and Molecular Biology; Medical Mycology
Date and Place of Birth: 14 October 1947; New Delhi
Parents: N P Srivastava and Tara
Spouse and Children: Vibha; one *s*
Address: School of Life Sciences & Special Centre for Molecular Medicine, Jawaharlal Nehru University,
New Mehrauli Road, New Delhi 110 067, India
Tel. (011) 2670 4004, 26704509 (O), (011) 2674 1580 (R), Mobile: 98109 74443
email: rp47jnu@gmail.com, rp47@mail.jnu.ac.in; URL: www.jnu.ac.in/faculty/rp/

Education: Lucknow Univ.: BSc 65, MSc 67; CDRI, Agra Univ.: PhD 70.

Career: CDRI, Lucknow: Res. Fellow 67–71, SSO 71–73; USC School of Medicine, Los Angeles: Visiting Res. Assoc. 73–76, New York Med. College: Vis. Res. Assoc. Prof., 79–80, Vis. Prof.: Catholic Univ., *Louvain la Neaue* Belgium 93, Polytechnic. Univ. of Valencia, Spain 94; Univ. of Bonn: Mercator Prof., 2005, Vis. Prof. Prof., Ecole Normale Superieure, Paris 2008–09; School of Life Sci. Prof., JNU 85–date, Rector: 2005–.

Scientific Work: Interested in ascertaining the molecular mechanisms of multidrug resistance in *Candida*. Characterized, both genetically and functionally, the first plasma membrane bound pump in *Candida albicans* of the ABC-type, Cdr1p, which is responsible for drug export from cells. The whole gamut of antifungal research has since changed to include these new observations wherein reduced permeability of azoles across cell membrane of *Candida* cells, is being implicated as one of the major determinant of antifungal susceptibilities. Cdr1p has unique substitution in otherwise conserved domains of nucleotide binding domains (NBDs) which have acquired critical function in ATP catalysis cycle which is unique to all fungal ABC transporters. Extensive site directed mutagenesis and chimera analyses revealed that Cdr1p has multiple induce fit drug binding site. For the first time, has shown that the CDR1 promoter is highly regulated which led to the identification of first transcription factor which regulate CDR1 basal expression.

Important Publications: **(1)** *Fungal pathogenesis principles & clinical applications* (2001) Marcel Dekker, pp. 601–631. **(2)** Molecular cloning and characterisation of a novel gene of *Candida albicans*, CDR1, conferring multiple resistance to drugs and antifungals (1995) *Curr. Genet.* **27**, 320. **(3)** Purification and characterization of N-terminal nucleotide binding domain of an ABC drug transporter of *Candida albicans*: Uncommon cysteine 193 of Walker A is critical for ATP hydrolysis (2003) *Biochemistry* **46**, 36, 10822–10832. **(4)** Functional characterization of *Candida albicans* ABC transporter Cdr1p (2003) *Eukaryotic Cell* **2**, 6, 1361–1375. **(5)** MFS transportome of the human pathogenic yeast *Candida albicans* (2008) *Genomics* **9**, 579.

Memberships: Fellow: NASI 95; INSA 2002 • Member: GRC Soc. of General Microbiology, UK; American Soc. of Microbiology; Intl Soc. for Human and Animal Mycology; American Assn of Advancement of Sciences.

Awards & Distinctions: Royal Soc. Commonwealth Bursary Award von Humboldt–Stiftung Fellowship, Univ. of Bonn, Germany • AVH Fellow, Univ. of Darmstadt, Germany • Wellcome Foundation Fellow, Univ. of Aberdeen • Biotechnology Overseas Fellowship Bristol Mayor-Squibb Princeton • Mercator Professorship, Univ. of Bonn, Germany • Vis. Professorship at Ecole Normale Superieure, Paris.

Prasad, Ramavarma Raghu*

Elected: 1958
Specialization: Biological Oceanography; Fisheries
Date of Birth: 17 December 1920; Mavelikara, Kerala
Parents: Rama Varma and Gouri
Spouse and Children: Indira; one *s*, one *d*
Last Address: Shreyas, Aakulam Road, Thurivikkal P O, Trivandrum, India
***Deceased:** 20 July 1994

Education: Univ. of Travancore: BSc 40; Univ. of Madras: MSc 43; Univ. of Stanford: PhD 48.

Career: Central Inland Fisheries Res. Inst., Barrackpore, Ministry of Food & Agri., GOI: Asst Res. Offr 47–48; CMFRI: Res. Offr 48–55, Sr Res. Offr 56–62, Dy Dir 62–68, Emer. Sci. 81–; ICAR, New Delhi: Dy Commissioner/ Asst Dir General of Fisheries 68–81.

Scientific Work: Devoted to the study of marine biology, oceanography and marine fisheries. Scientific papers are on marine plankton and larval life of lobsters in particular.

Memberships: Fellow: Zoological Soc. of India.

Prasad, Surendra

Elected: 1997
Position: Prof., Dir, IIT New Delhi
Specialization: Signal Processing; Communication Theory; Speech Processing
Date and Place of Birth: 10 July 1948; Delhi
Parents: Nargis Ram Prashad and Laxmi Devi
Spouse and Children: Usha; two *s*
Address: Indian Institute of Technology, Hauz Khas, New Delhi 110 016, India
Tel. (011) 2658 2020, (011) 2659 1701 (O), (011) 2658 2022 (R)
email: sprasad@ee.iitd.ac.in, director@admin.iitd.ac.in

Education: IIT Kharagpur: BTech 69; IIT Delhi: MTech 71, PhD 74.

Career: IIT Delhi: Assoc. Lecturer 71–74, Lecturer 74–78, Asst Prof. 78–85, Prof. 85–, Dir 2006–; Loughborough Univ., UK: Vis. Res. Fellow 76–77; Penn. State Univ.: Vis. Prof. 85–86.

Scientific Work: The most significant work comprises the development of new techniques and algorithms for signal processing. Made important contributions to the field covering the design of optimum signals and receivers for analog and digital communications; array pattern synthesis and optimal array processing of sensor signals; optimum MTI filters; adaptive signal processing and modelling of scalar and multichannel time series; high resolution spectrum and direction estimation; disconvolution algorithms for seismic data; higher order spectrum estimation and statistical signal processing; digital communications; and speech coding. Has made significant contributions to indigenous R&D effort by executing technologically advanced projects in sonar and seismic signal processing, and digital communications. As a teacher, has been actively involved in manpower development programmes, first in the area of sonar and underwater systems and also in telematics and communications.

Memberships: Fellow: INAE 93; INSA 94; FIETE.

Awards & Distinctions: Vikram Sarabhai Research Award 87 • S S Bhatnagar Prize 88 • Omprakash Bhasin Prize 94 • K Sreenivasan Memorial Award 94.

Prasad, Yellapregada Venkata Rama Krishna

Elected: 1991
Specialization: Deformation Processing; Process Modelling; Deterministic Chaos; Microstructural Control
Date and Place of Birth: 21 May 1944; T K Palem, Andhra Pradesh
Parents: Y Satyanarayana Murty and Ramaseshamma
Spouse and Children: Y V Lakshmi; one *s*, two *d*
Address: B/2, Hospital Extension, Vinayaka Nagar, Hebbal, Bangalore 560 024, India
Tel. (0), (080) 2333 0673 (R)
email: prasad@processingmaps.com, prasad_yvrk@hotmail.com

Education: Andhra Univ.: BSc 61, IISc: BE 64, PhD 71; BHU: MSc 66.

Career: IISc, Dept of Metallurgy: Lecturer 66–73, Asst Prof. 73–81, Assoc. Prof. 81–84, Prof. 84–2003, Chmn 92–95.

Scientific Work: Developed a model that forms a missing link between continuum mechanics and atomistic approaches to the modelling of materials flow in net-shape making processes. The dynamic materials model found applications in processing very complex high-tech materials like metal-matrix composites with whiskers, high-temperature alloys from powders and rapidly solidified P/M materials, without recourse to trial-and-error methods.

Important Publications: **(1)** *Hot working guide: A compendium of processing maps* (1997) ASM International, Materials Park, Ohio, USA.

Memberships: Fellow: INSA 90; INAE 90 • Member: Indian Institute of Metals.

Awards & Distinctions: Indranil Award and Gold Medal 81–82 • IIM Binani Gold Medal 82 • National Metallurgists Day Award 82.

Prasada Rao, Turaga Sundara Rama

Elected: 1994
Specialization: Petroleum Refining and Heterogeneous Catalysis
Date and Place of Birth: 20 January 1939; Ganti Pedapudi, Andhra Pradesh
Parents: Rama Rao and Adi Saraswati
Spouse: Sujatha Venkateswari
Address: SFS Flat No. 600, DDA/HIG Flats, Sector 13, Phase 2, Pocket B, Dwaraka,
New Delhi 110 045, India
Tel. Mobile: 98103 38091
email: tsrpr@hotmail.com

Education: Andhra Univ.: BSc Hons. 61, MSc 63, PhD 68.

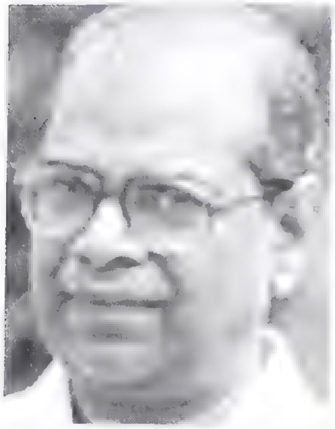
Career: PDIL: Dhanbad: Res. Chemist/Asst Sci. 67–74; Indian Petrochemicals Corporation, Baroda, R&D Centre: Sci. 74–79, Sr Sci. 79–82, Principal Res. Offr 82–84, Sr Res. Manager 84–89, Dy General Manager 89–90; IIP, Dehradun: Dir 90–99; Sarasijam Technologies, New Delhi: Chmn 99–.

Scientific Work: Responsible for the development of catalysts, catalytic processes and commercialization of adsorbents. Significant achievements include xylene isomerization and encelite catalyst commercialization; commercialization of mono and bimetallic catalysts for catalytic reforming; commercialization of Pt/Al_2O_3 paraffin dehydrogenation catalyst and alumina catalyst for dehydration of ethanol; commercialization of adsorbents like 3A, 4A molecular sieves. Research work led to the application of isomorphously substituted zeolites for conversion of hydrocarbons. Has jointly developed PFHS method for preparation of hydroprocessing catalysts. Recent work provided evidence for different sites of hydrode-sulfurization and hydrogenation and also shown that $Co\ Mo/Al_2O_3$ requires different calcination temperatures for optimum activity.

Memberships: Fellow: Andhra Pradesh Acad. of Sci.; INAE 93 • Member: New York Acad. of Sciences; Indian Inst. of Chemical Engineering.

Awards & Distinctions: Kuloor Memorial Award 92 • FICCI Award 93 • Bhartiya Sanskiriti Puraskar for excellence in Science 94 • Delhi Telugu Acad. Award 94.

Prathap, Gangan



Elected: 1991
Position: Dir, NISCAIR, New Delhi
Specialization: Structural Mechanics; Finite Element Method; Composite Materials
Date and Place of Birth: 6 June 1951; Singapore
Parents: Narayanan Gangan and C K Subhadra
Spouse and Children: Latha; one *s* (Rahul)
Address: National Inst. of Sci. Communication and Infn Resources, K G Krishnan Marg, New Delhi 110 012
Tel. (011) 2854 6024, (011) 2651 7059 (O)
email: gp@niscair.res.in, director@niscair.res.in

Education: IIT Madras: BTech 74, PhD 78.

Career: IIT Madras: Fellow 74–77, Res. Asst 77–78; NAL, Bangalore: Res. Assoc. 78–80, Sci. 80–2000; C-MMACS, Bangalore, Sci. 2000–08; CUSAT, Kochi, Vice Chancellor 2007–09; NISCAIR: Dir 2009–.

Scientific Work: Contributed a definitive resolution to the long-standing controversy regarding the physics and the mathematical modelling of nonlinear vibration of thin shells. Made significant contributions to the fundamental understanding of finite element formulations. Concept of consistency introduced has been used to develop a new class of robust finite elements for use in general purpose structural analysis. Software package, FEPACS, developed jointly with others has been licensed to two engineering consultancy companies.

Memberships: Fellow: INSA 99 • Member: Indian Soc. for Theoretical and Applied Mechanics; Indian Acad. for Mathematical Modelling in Engineering and Science.

Awards & Distinctions: IASc Assoc. 85–88 • NAL Foundation Award 88 • S S Bhatnagar Award 90.

Puntambekar, S V*

Elected: 1948
Specialization: Organic Chemistry; Oils and Fats
Date and Place of Birth: 17 July 1898; Pune
Parents: Venkatesh Damodar and Rukmini
Spouse and Children: Sharyee Shripati; two *s*, one *d*
Last Address: Department of Chemical Technology, University of Bombay, Matunga,
Bombay 400 019, India
***Deceased:** 6 May 1969

Education: Univ. of Illinois, USA: BSc, MSc, PhD.

Career: Forest Res. Inst., Dehra Dun: Asst Chemist, Offr-in-Charge; Indian Lac Res. Inst.: Dir; Univ. of Bombay, Dept of Chemical Technol.: Prof. of Polymer Technology.

Puri, Gopal Singh*

Elected: 1960
Specialization: Botany
Date and Place of Birth: 18 August 1915; Kallar, Pakistan
Spouse and Children: Kailash Puri; one *s*, two *d*
Last Address: Botany Department, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
***Deceased:** 18 April 1995

Education: Univ. of Punjab: MSc Hons; Univ. of Lucknow: PhD; Univ. of London: PhD.

Career: Botanical Survey of India, Poona: Regional Botanist; Kwame Nkrumah Univ. of Sci. & Technol., Ghana, Botany Dept: Prof. 61–66; Liverpool Polytechnic, UK: 66–80.

Scientific Work: First worked on the *Pleistoscene Flora of Kashmir.* Later carried out ecological research, both in UK and India and published papers on the ecology of Western Himalayas as well as other parts of the country.

Important Publications: **(1)** *Indian manual of plant ecology.* **(2)** *Forest ecology of India.*

Puri, Sanjay

Elected: 2006
Position: Prof., JNU, New Delhi
Specialization: Statistical Physics; Condensed Matter Physics; Nonlinear Dynamics
Date and Place of Birth: 23 November 1961; Rampur, Uttar Pradesh
Parents: Rabindra Nath Puri and Uma
Spouse and Children: Bindu; two *s* (Nikaash, Akshay)
Address: School of Physical Sciences, Jawaharlal Nehru University, New Delhi 110 067, India
Tel. (011) 2670 4634 (O), (011) 2674 1084 (R), Mobile: 98185 52477
email: purijnu@gmail.com; URL: http://www.jnu.ac.in/Faculty/spuri

Education: IIT Delhi: MS 82; Univ. of Illinois, USA: MS 83, PhD 87.

Career: JNU: Asst Prof. 87–93, Assoc. Prof. 93–2001, Prof. 2001–.

Scientific Work: Made many contributions to the statistical physics of far-from-equilibrium systems. In particular, studies of the kinetics of phase transitions have received great attention. Work provides insights into the role played by defect structures in driving domain growth. These concepts are of great interest in diverse areas like metallurgy, materials science, chemical physics, and phase transitions in the early universe. Has focussed on phase separation in confined geometries or surface-directed spinodal decomposition. Formulated phenomenological models for phase separation at surfaces, which are now used extensively. Further, has used these models to obtain results which have explained and motivated many experiments on fluid and solid mixtures in confined geometries.

Important Publications: **(1)** Computationally efficient modelling of ordering of quenched phases (1987) *Phys. Rev. Lett.* **58**, 836. **(2)** Asymptotic structure factor and power-law tails for phase ordering in systems with continuous symmetry (1991) *Phys. Rev. Lett.* **67**, 2670. **(3)** Power laws and crossovers in off-critical surface-directed spinodal decomposition (2001) *Phys. Rev. Lett.* **86**, 1797. **(4)** Dissipative phenomena in condensed matter: Some applications, Springer Series in Materials Science 71, Springer-Verlag, Heidelberg. **(5)** Velocity distributions and aging in a cooling granular gas (2007) *Phys. Rev.* **E75**, 031302.

Awards & Distinctions: INSA Young Scientist Medal 93 • IPA N Satyamurthy Award 95 • B M Birla Science Award 2001 • Homi Bhabha Fellowship 2003 • S S Bhatnagar Prize 2006.

Puri, Vishwambhar*

Elected: 1945
Specialization: Plant Morphology; General Biology; Taxonomy
Date and Place of Birth: 10 December 1909; Nagina, Bijnor, Uttar Pradesh
Parents: Bhim Puri and Radha Kunwar
Spouse and Children: Vimala; three *d* (Meena, Anita, Vibha)
Last Address: Department of Botany, Meerut University, Meerut 250 005, India
***Deceased:** 9 October 2002

Education: Agra Univ.: BSc 32, MSc 34, DSc 40.

Career: Meerut College, Meerut, Dept of Botany: Lecturer 35–42, Sr Lecturer 43–46, Prof. and Head 47–61, Univ. Prof. of Botany and Vice Principal 61–65, Principal 65–69; Meerut Univ.: Sr Prof. and Head of Botany Dept 69–72, Hon. Dir 75–76, Prof. Emeritus of Botany 76.

Scientific Work: Studied floral anatomy of Rhoeadates and Parietales and offered a modification of four carpels in crucifers. Suggested that crucifers have only two carpels and that their peculiarities are best explained on the basis of their placentation. Clarified position in Cucurbitaceae and Gentianaceae. Further concluded that floral anatomy does not help in elucidating morphology of inferior ovary but offers a better appreciation of the morphology of the sporocarp of *Marsilea*. Studies on evolution of higher plants seemed to encourage him to suggest that monocots and dicots may be more independent than is usually believed.

Important Publications: **(1)** Studies in the order Parietales-Part I: A contribution to the morphology of *T. Chinensis* (1939) *Lour. Beih. Bot. Centralbl.* **A59**, 335–349. **(2)** A contribution to the morphology of *G. livingstonii* T Anders (1939) *Proc. Indian Acod. Sci.* **B9**, 74–86. **(3)** The life history of *Moringa oleifera* Lamk (1941) *J. Indian Bot. Soc.* **20**, 263–284. **(4)** The role of floral anatomy in the solution of morphological problems (1951) *Bot. Rev.* **17**, 471–553. **(5)** *Placentation in Angiosperms* (1952) **18**, 603–651. **(6)** Monocotyledons: Some comments in their morphology and evolution (1990) *Acta Bot. India* **18**, 1–23.

Memberships: Fellow: Indian Botanical Soc. 40; INSA 57; NASI 61 • President: Indian Botanical Soc. 66–67; Biological Sec. of Natl Acad. of Sci. 67–68; Botany Sec. of Indian Sci. Congress 69–70; Intl Soc. of Plant Morphologists 75–79.

Purnachandra Rao, Venigalla

Elected: 2003
Position: Sci., NIO, Dona Paula
Specialization: Marine Geology; Palaeo sea levels; Authigenic Minerals; Palaeoclimate
Date and Place of Birth: 10 October 1955; Pyaparru, Andhra Pradesh
Parents: V Subba Rao and V Neelavati
Spouse and Children: V Shoba Rani; two *d*
Address: Geological Oceanography Division, National Institute of Oceanography, Dona Paula,
Goa 403 004, India
Tel. (0832) 245 0450 (O), (0832) 245 3471 (R), Mobile: 98235 56088
email: vprao@nio.org; URL: http: www.nio.org

Education: Andhra Univ.: BSc 77, MSc 80, PhD 89.

Career: National Inst. of Oceanography, Sci. Asst 80–82, Sci. 83–.

Scientific Work: Research greatly improved the understanding of the processes involved in formation of phosphorites and dolomites. Carried out extensive studies of phosphorites from the continental margins, seamounts of the Pacific and Indian Oceans and mid-oceanic ridges and onshore phosphorites, worked out the petrographic and geochemical criteria for identifying phosphorites formed through various pathways and identified factors that control the composition of the phosphorites. Highlighted the role of microbial activity and microenvironments in the phosphorite and dolomite formation. Discovery of Quaternary phosphate stromatolites on the eastern margin of India is significant as it contradicts the hitherto held view that there were no Quaternary/modern analogs of ancient phosphorites. Discovered the largest authigenic green clay facies in the world associated with low fluvial inputs on the continental margins of India. Investigated the carbonate deposits along the western margin of India for their composition, sea level and environmental conditions. Discovered algal (*Halimeda*) biotherms, identified sea level indicators and documented several evidences of late quaternary neotectonic activity.

Important Publications: **(1)** Rock magnetic and geochemical record in a sediment core from the eastern Arabian Sea: Diagenetic and environmental implications during the late quaternary (2008) *Palaeogeogr. Palaeoclimatol. Palaeoecol.* **270**, 46–52. **(2)** Origin of cretaceous phosphorites from the onshore of Tamil Nadu, India (2007) *J. Earth Syst.* Sci. **116**, 525–536. **(3)** Microbial dolomite crusts from the carbonate platform off western India (2003) *Sedimentology* **50**, 819–830. **(4)** Late Quaternary *Halimeda* biotherms and aragonitic faecal pellet-dominated sediments on the carbonate platform of the western continental shelf of India (1994) *Marine Geol.* **121**, 293–315. **(5)** Verdine and other associated authigenic (glaucony and phosphate) facies from the surficial sediments of the southwestern continental margin of India (1993) *Marine Geol.* **111**, 133–158.

Memberships: Fellow: INSA 2007; Geological Soc. of India; Indian Geophysical Union.

Awards & Distinctions: UNESCO–ROSTSCA Young Scientist Award 89 • CSIR Young Scientist Award 90 • National Mineral Award 94.

Qasim, Syed Zahoor

Elected: 1976
Position: Chmn, Centre for Ocean Environ. Studies, New Delhi
Specialization: Oceanography
Date and Place of Birth: 31 December 1926; Allahabad, Uttar Pradesh
Parents: Zamir Qasim and Fakhra
Spouse and Children: Birjees; three *d* (Yasmin, Seeme, Sabin)
Address: Centre for Oceans and Environmental Studies, A-2 (Basement), East of Kailash, New Delhi 110 065, India
Tel. (011)4607 8340 (O), (011) 2433 7626 (R)
email: zqasim@hotmail.com

Education: AMU: BSc 49, MSc 51; Univ. of Wales: PhD 56, DSc 68.

Career: Central Inst. of Fisheries Education, Bombay: Prof. 62–64; Indian Ocean Expedition: Asst Dir 64–65; Natl Inst. of Oceanography: Asst Dir 66–70, Dir 74–81; CMFRI: Dir 70–74; CIFT: Dir 72–73; Ministry of Environment, Forests & Wildlife: Secretary 81–82; Dept of Ocean Development: Secretary 82–88; Jamia Millia Islamia Central Univ.: Vice-Chancellor 89–91.

Scientific Work: Disntinguished for outstanding contributions in fisheries biology and oceanography, and programmes pertaining to productivity of marine communities. Promoted ocean research in its totality in India and was responsible for building up the infrastructure and facilities for marine and Antarctic research. Initiated polar research in India working on the data, samples and materials collected from Antarctica. Indicated the potential role of aquaculture, and the first in promoting the technology of cultured pearls. Led the first expedition to explore deep sea polymetallic nodules in the Indian Ocean and the first expedition to Antartica.

Important Publications: **(1)** Time and duration of the spawning season in some marine teleosis in relation to their distribution (1956) *J. Conseil International pour L'Exploration de la Mer.* **21**, 144–155. **(2)** The biology of Blennius pholis L. (Teleostei) (1957) *Proc. Zool. Soc. London.* **128**, 161–208. **(3)** Primary production in some tropical environments (1979) In: *Marine Production Mechanisms* (edited by M J Dunbar). International Biological Programme 20, Cambridge University Press, pp. 31–69. **(4)** Oceanography of the northern-Arabian Sea (1982) *Deep-Sea Res.* **29**, 1041–1068. **(5)** Genesis and development of Antarctic research in India (2008) *Indian J. Polar Sci.* **1**, 1–10

Memberships: Fellow: INSA 77; NASI 91; TWAS 2003; Maharashtra Acad. of Sci.; Bihar Acad. of Sci. • Life Member: Marine Biological Assn UK; Marine Biological Assn of India; Planning Commission 91–96 • President: National Acad. of Sci. 53–54; Natl Environmental Sci. Acad. 2007– • General President: Indian Science Congress 92–93.

Awards & Distinctions: Padma Shri 74 • Rafi Ahmed Kidwai Memorial Prize 78 • Padma Bhushan 82 • Fuel Instruments and Engineers Pvt. Ltd Award 83 • Lal Bahadur Shastri Award 89 • Maulana Mohammad Ali Jauhar Award 90 • Great Son of the Soil Award 90 • Rajiv Gandhi Award 91 • Shiromani Award 94. • Pacon Intl Service Award 98 • Oceanology Intl Pacific Rim, U K Lifetime Achievement Award 99 • Pride of Nation Award 2000 • GOI Natl Ocean Sci. & Tech. Dev. Award 2004 • SOFTI Bienmial Award 2007 • ISC Lifetime Achievement Award 2008. Univ. of Andhra, North Bengal, Sri Venkateswara Univ., BHU, Vidyasagar Univ.: DSc h c.

Racine, Charles S J*

Elected: 1975
Specialization: Partial Differential Operators
Date of Birth: 22 July 1897
Last Address: Department of Physics, Loyola College, Madras, India
***Deceased:** 8 July 1976

Education: Univ. of Paris, DSc 34

Career: Univ. of Paris: Res. Fellow 30–34; St Joseph's College, Tiruchy: Lecturer of Mathematics 34–39; Loyola College, Madras, Dept of Phys.: Prof. 39.

Scientific Work: Worked on Riemann integration, theory of relativity motion of a particle of varying mass Frullani integrals, Galois theory and topological duals of a class of Hamiltonians.

Important Publications: *Introduction to Potential Theory*

Radhakrishna, Bangalore Puttaiya

Elected: 1956
Specialization: Precambrian Geology; Economic Geology; Groundwater Hydrology
Date and Place of Birth: 30 April 1918; Bangalore
Parents: B Puttaiya and Venkamma
Spouse and Children: Subhadramma; two *s*, four *d*
Address: 243/30, 5th Main Road, Chamarajpet, Bangalore 560 018, India
Tel. (080) 2667 3844 (R)
email: kkitts@gmail.com

Education: Univ. of Mysore: BSc Hons 37, PhD 54.

Career: Department of Mines & Geology, Govt of Karnataka: Geologist 37–65, Dir 65–73; Mysore Minerals Ltd: Chmn 67–74; Chitradurga Co. Ltd: Chmn & Managing Dir 74–78; GSI: President 92–2007.

Scientific Work: Elucidated the complex geological history of the ancient schistose rocks of Karnataka and the development of its mineral resources. Demonstrated convincingly that the hard rocks of Karnataka, till now neglected, could function as suppliers of ground water for domestic and irrigation needs: emphasized the importance of the belt of Closepet granites, neogene reactivation of the Indian peninsula, the youthful character of the Western Ghats, unravelled the complex geological history of India in the light of the plate tectonic theory, identifying crustal elements of different ages and character which have been brought together to form the present day India. Championed the cause of gold mining, emphasizing the enormous potential that exists for the gold mining industry.

Memberships: Fellow: INSA 73.

Awards & Distinctions: National Mineral Award 71 • Karnataka Rajyotsava Award 74 • Padma Shri 91.

Radhakrishna, Tallavajhala

Elected: 2000
Position: Sci., Centre for Earth Science Studies, Thiruvananthapuram
Specialization: Geochemistry and Igneous Petrology; Palaeomagnetism; Geodynamics
Date and Place of Birth: 1 July 1954; Jami, Andhra Pradesh
Parents: Rama Jogi Narasimham and Parvatamma
Spouse and Children: Rajyalakshmi; one *s*, one *d*
Address: Centre for Earth Science Studies, Akkulam, Thiruvananthapuram 695 031, India
Tel. (0471) 244 2451 (O), (0471) 272 3843 (R)
email: tradha1@rediffmail.com

Education: Andhra Univ.: BSc 73, MSc 75, PhD 81.

Career: National Geophysical Res. Inst., Hyderabad: Jr Res. Fellow 76–79; Centre for Earth Science Studies, Thiruvananthapuram: Sci. 79–.

Scientific Work: Carried out an interdisciplinary investigation of geochemistry, petrology, palaeomagnetism and isotope dating of the post archaean basic magmatism manifested as dykes in South India. The study identified discrete proterozoic (2000–1600 Ma) dyke magmas derived from enriched mantle sources. The results form the fundamental evidence to demonstrate involvement of the lithospheric mantle developed in the archaean (~ 3 Ga; during the crustal building activity in the Indian shield) in their petrogenesis. Study distinguished two petrologically contrasting late phanerozoic magmatic phases within a short period of time (at c. 85 Ma and at c. 70–65 Ma) on the west coast of India. These magmas are linked to initiation of a mantle plume (c. 85 Ma) and gradual change of tectonic scenario to active rifting (c. 70–65 Ma) between India and Seychelles or alternatively these two events might relate to the Marion and Reunion plumes respectively. Established a modern paleomagnetic laboratory and generated credible database to produce basic framework of the proterozoic APWP of the Indian shield. The important geotectonic deduction from the neoproterozoic results indicated closure of the protoMozambique Ocean leading to collision (c. 700 Ma) of the East African cratons and the India shield and has drawn significant implications for the position of India within Rodinia and Gondwana reconstructions. Focus is on materials chemistry, specifically addressing the design and fabrication of novel molecular materials and basic issues of molecular assembly. The highlights of the research are: the development of novel strategies for the optimal assembly of molecular into materials for nonlinear optical applications; new approaches for Langmuir–Blodgett film fabrication to tackle stability and aggregation issues.

Memberships: Fellow: European Communities 95.

Awards & Distinctions: INSA Young Scientist Award 85 • BOYSCAST Fellow 90.

Radhakrishnan, Amurtur Narayana (Aiyar)*

Elected: 1974
Specialization: Biochemistry; Enzymology; Biomembrane Transport
Date and Place of Birth: 17 May 1927; Amurtur, Karnataka
Parent: Narayana Iyer
Spouse and Children: Rajeshwari; two *d*
Last Address: Department of Biochemistry, Indian Institute of Science, Bangalore 560 012, India
***Deceased:** 17 June 1990

Education: Mysore Univ.: BSc 48, MSc 49; IISc, Bangalore: DIISc 50, PhD 55.

Career: National Inst. of Health, USA, Tufts Univ. School of Medicine, USA: 55–57; Univ. of California, USA: Res. Assoc. 57–60; IISc, Bangalore, Dept of Biochem.: Rockefeller Res. Fellow 60–62, Emeritus Prof. 87–90; CMC, Vellore, Wellcome Res. Unit: Assoc. Prof. of Biochem. 62–65, Prof. 65–77; Univ. of Hyderabad, School of Life Sci.: Prof., Dean 77–87.

Scientific Work: Discovered (cis)-4-hydroxy-L-proline, sym-homospermidine, etc. in sandal and established various pathways in amino acid metabolism. In the biomedical area, discovered a general transport system for dipeptides in animals and in man and a versatile new enzyme 'master' dipeptidase. Work on phenylketonuria and lactase deficiency in humans in India is a classic work. Also demonstrated, by a critical chemical and biochemical evidence, a case of neonatal arginosuccinic aciduria. One of the finest contributions is on the size, shape and subunit structure of rabbit intestinal glycoamylase using its hydrodynamic and physicochemical properties. Has also published a number of original papers in elegant methodology for the separation and determination of amino acids and small peptides.

Memberships: Fellow: INSA 78 • Member: CSIR; ICMR • President: SBC 73–74.

Awards & Distinctions: J C Bose Award 77 • B C Guha Memorial Award 81• Medical Res. Council Hari Om Ashram Alembic Award 77• UGC J C Bose Award 77.

Radhakrishnan, Jaikumar

Elected: 2007
Position: Prof., TIFR, Mumbai
Specialization: Computation Complexity; Combinatorics; Quantum Computing
Date and Place of Birth: 30 May 1964; Chennai, Tamil Nadu
Parents: Subramaniam Radhakrishnan and Moham
Spouse and Children: Sumana Ramanan Dixit; one *s*, one *d*
Address: School of Technology & Computer Science, Tata Institute of Fundamental Research,
Homi Bhabha Road, Mumbai 400 005, India
Tel. (022) 2278 2311 (O), (022) 2278 3311 (R)
email: jaikumar@tifr.res.in

Education: IIT Kharagpur: BTech 85; Rutgers Univ., USA: MS 91, PhD 91.

Career: CMC Ltd.: Assoc. Systems Engg 85–86; Japan Advanced Inst. for Sci. & Tech.: Vis. Prof. 92–93; TIFR: Fellow 91–97, Reader 97–2000; Assoc. Prof. 2000–07; Prof. 2007–; Hebrew Univ., Jerusalem: Postdoc Visitor 96–97; Toyota Technological Inst. at Chicago: Vis. Prof. 2004–06.

Scientific Work: Made contributions in the areas of complexity theory, algorithms and combinatorics. In complexity theory, main contributions concern lower bounds on the size of circuits, on the running time of parallel and sequential algorithms, and on classical and quantum communication complexity. Contributed to the study of approximate, distributed and randomized solutions to algorithmic and data structure problems. Worked on combinatorial problems employing probabilistic and information theoretic techniques.

Awards & Distinctions: IASc Assoc. • 94–99 • S S Bhatnagar Award 2008.

Radhakrishnan, Thavarool Puthiyedath

Elected: 2004
Position: Prof., Univ. of Hyderabad
Specialization: Materials Chemistry; Computational Chemistry
Date and Place of Birth: 25 May 1960; Taliparamba, Kerala
Parents: A K Narayanan Nambiar and T P Narayani Amma
Spouse and Children: V Latha; one *s* (Vishnu krishnan)
Address: School of Chemistry, University of Hyderabad, Hyderabad 500 046, India
Tel. (040) 2313 4827, (040) 2301 1068 (O), (040) 2301 0727 (R)
email: tprsc@uohyd.ernet.in; URL: http://chemistry.uohyd.ernet.in/~tpr/

Education: Calicut Univ.: BSc 80; IIT Madras: MSc 82; Princeton Univ.: MA 84, PhD 87.

Career: Princeton Univ., USA: Teaching Asst 82–84; Univ. of Texas: Res. Assoc. 87–88; IIT Madras: CSIR Pool Offr 89; Univ. of Hyderabad: Lecturer 89–93, Reader 93–2001; Prof. 2001–.

Important Publication's: **(1)** Polymer thin films ebbedded *in situ* grown metal nanoparticles. (2009) R. Soc. *Chem.* **38**, 2646. **(2)** Growing molecular crystals on inorganic crystals: Polar structure induced by noncentrosymmetric templates (2008) Angewandte Chemie Intl Edition (Wiley), **47**, 3969. **(3)** Molecular structure, symmetry and shape as design elements in the fabrication of molecular crystals for second harmonic generation and the role of moleculer-in-materials. (2008) *Am. Chem. Soc.* **41**, 367. **(4)** Nanoparticle-embedded polymer: In situ synthesis, free-standing films with highly monodisperse silver nanoparticles and optical limiting (2005) *Am. Chem. Soc.* **17**, 9. **(5)** Helical superstructures of a C2-symmetric molecule exhibiting strong second harmonic generation in the solid state (2001) Angewandte Chemie Intl Edition (Wiley) **40**, 2451.

Scientific Work: The focus of research is on molecular materials: design and synthesis of novel molecules; fabrication of materials – crystals, thin films, LB films, nanostructure; structural characterisations, spectroscopic studies and microscopy; investigation of material attributes: optical, nonlinear optical, magnetic, electrical, optoelectronic; computational modelling of molecular properties and correlation to material attributes.

Memberships: Fellow: Inst. for Advanced Studies; Hebrew Inst., Jerusalem.

Awards & Distinctions: IASc Assoc. 90–95 • INSA Medal for Young Scientists 92 • CRSI Bronze Medal 2002 • DST Swarnajayanthi Fellowship 2002.

Radhakrishnan, Venkataraman

Elected: 1968
Position: Prof. Emeritus, RRI
Specialization: Astronomy; Astrophysics; Aeronautics
Date and Place of Birth: 18 May 1929; Madras
Parents: Chandrasekhara Venkata Raman and Lokasundari
Spouse and Children: Francoise Dominique; one s, (Vivek)
Address: Raman Research Institute, C V Raman Avenue, Bangalore 560 080, India
Tel. (080) 2361 0522 (O), (080) 2361 1823 (R)
email: rad@rri.res.in

Education: Mysore Univ.: BSc Hons 50.

Career: IISc, Bangalore: Res. Scholar 50–51; British Acoustic Films: 53–55; Chalmers Univ. of Technol., Sweden: Res. Asst 55–58; California Inst. of Technol., USA: Sr Res. Fellow 59–64; Radio Phys. Dn of CSIRO, Australia: Sr Res. Sci., Principal Res. Sci. 65–71; Meudon Observatory, France: 71–72; RRI, Bangalore: Dir 72–94, Prof. Emeritus 94–.

Scientific Work: Contributions in the fields of planetary radiation, interstellar hydrogen, radio source polarization and observations and interpretations of pulsar radiation. Many years were also spent on the design, fabrication and testing of ultralight aircraft and sailing vessels.

Important Publications: Supernovae: *Their progenitors and remnants* (Co-edited), Indian Acad. of Sci.

Memberships: Fellow: Intl Union of Radio Sc.; IAU; Royal Astronomical Soc., UK • Foreign Member: Royal Swedish Acad. of Sci.; Foreign Assoc: US Natl Acad. Sci.

Awards & Distinctions: M P Birla Memorial Award 2005 • Gujanmal Modi Award 2005 • Sir Ashutosh Mukherjee Award • Amsterdam Univ. DSc (hc).

Raghava, Gajendra Pal Singh

Elected: 2009
Position: Sci., Head, Bioinformatics Centre, IMTECH, Chandigarh
Specialization: Bioinformatics particularly Genome Annotation; Functional Annotation of Proteomes; Searching Drug Targets; Subunit Vaccine Design
Date and Place of Birth: 25 May 1963; Buland Shahr, Uttar Pradesh
Parent: S C Singh
Spouse and Children: Madhu; 2 children
Address: Institute of Microbial Technology, Sector-39A, Chandigarh, India
Tel. (0172) 269 0557 (O)
email: raghava@imtech.res.in; URL: http://www.imtech.res.in/raghava/

Education: Meerut Univ: BSc 82, MSc 84; (IIT), New Delhi: MTech 86; Panjab Univ., Chandigarh: PhD 96.

Career: Inst. of Microbial Technol., Chandigarh: Computer Sci. 86–, Head of Bioinformatics Center 94–, Coordinator, DIC; Oxford Univ., European Bioinformatics Inst. Cambridge: Postdoc Fellow 96–98.

Scientific Work: Accidentally in 1991, got interested in research and developed a method for calculating concentration of antibody/antigen from ELISA data. Intially, developed computer programs for general biological problems and later developed methods for protein secondary structure prediction; the methods successfully compete in international competitions. In 1999, established research group at IMTECH with emphasis on protein structure prediction and genome annotation. In 2001, the group also focussed on subunit vaccine design.

Important Publications: **(1)** ESLpred2: Improved method for predicting subcellular localization of eukaryotic proteins (2008) *BMC Bioinformatics* **9**, 503. **(2)** Prediction of RNA binding sites in a protein using SVM and PSSM profile (2007) *Proteins: Structure, function and bioinformatics* **71**, 189–94. **(3)** Prediction of mitochondrial proteins using support vector machine and hidden Markov model (2006) *J. Biol. Chem.* **281**, 5357–5363 **(4)** AlgPred: Prediction of allergenic proteins and mapping of IgE epitopes (2006) *Nucl. Acids Res.* **34**, W202–9. **(5)** SVM-based method for subcellular localization of human proteins using amino acid compositions, their order and similarity search (2005) *J. Biol. Chem.* **280**, 14427–14432.

Awards & Distinctions: S S Bhatnagar Award 2008 • National Bioscience Award 2005–06.

Raghavan, Srinivasacharya

Elected: 1975
Specialization: Number Theory; Automorphic Functions
Date and Place of Birth: 11 April 1934; Thillaisthanam, Tamil Nadu
Parents: R S Srinivasacharya and Rukmani Ammal
Spouse and Children: Anuradha; one s (Srinivas)
Address: Flat S-1, Suryakantha, (New) 26, Second Main Road, CIT Colony, Mylapore,
Chennai 600 004, India
Tel. (044) 2498 4963 (R)
email: ragrad@gmail.com

Education: Univ of Madras: BA Hons 54; Bombay Univ.: PhD 60.

Career: TIFR, Bombay, School of Maths: Res. Fellow 54, Prof. 75–94, Dean 86–89; Inst. for Advanced Study, USA: Vis. Member 65–67; Sonderforschungbereich fuer Geometric u. Analyse, Univ. Goettingen, Germany: Visitor 86–87.

Scientific Work: Contribution to arithmetical aspects of Siegel modular forms and integral representation (of quadratic forms) by quadratic forms including an analogue of Hardy–Ramanujan–Hecke asymptotic formula; analogue (with Ramanathan) over algebraic number fields of Oppenheim's theorem on density of values of irrational indefinite quadratic (zero) forms; analytic continuation of non-holomorphic Eisenstein series of degree 3; finding the structure of singular Siegel modular forms; improved estimates (with Boecherer as with Weissauer) for Fourier coefficients of Siegel modular forms; work (jointly with Dani) on density of orbits of irrational euclidean frames under discrete groups; investigation (with Rangachari) of Ramanujan's integral identities.

Important Publications: **(1)** Modular forms of degree *n* and representation by quadratic forms, (1959) *Ann. Math.* **70**, 446–477, **(2)** On a Diophantine inequality concerning quadratic forms (1968) *Nachr. Akad. Wissen. Goettingen*, 251–262. **(3)** Singular modular forms of degree s (1978) *TIFR Studies Math.* **8**, 263–272. **(4)** Orbits of euclidean frames under discrete linear groups (1980) *Israel J. Math.* **36**, 300–320. **(5)** On Fourier coefficients of Siegel modular forms (1988) *J. Reine Angew. Math.* **384**, 80–101. **(6)** On Ramanujan's elliptic integrals and modular identities, Number Theory and Related Topics (1989) *TIFR Studies in Math.* **12**, 119–149.

Memberships: Fellow: INSA 78.

Awards & Distinctions: S S Bhatnagar Award 79.

Raghavan, Tupil Srinivas*

Elected: 1939
Specialization: Cytology; Genetics
Date and Place of Birth: 29 September 1905; Coimbatore, Tamil Nadu
Parent: T Rangaswami Iyengar
Children: three *s*, one *d*
Last Address: V-1, HIG Flats, Kotturpuram, Madras 600 085, India
***Deceased:** 30 January 1986

Education: Univ. of Madras: BA Hons 26, MA 28; Univ. of London: PhD 37.

Career: Presidency College, Madras: Demonstrator 25–27; St. Berchman's College, Changanacherry: Prof. of Botany 27–29, UGC Prof. of Botany 62–64; Univ. of Annamalai: Prof. and Head of Botany 31–47, Dean of Faculty 38–41; Coconut Res. Inst., Sri Lanka: Head of Botany Dn 47–49; Sugarcane Breeding Station, Coimbatore: Cane Breeding Offr 49–56; Sardar Patel. Univ., Vallabhnagar: Prof. 60–62.

Scientific Work: Did original cytological studies in Capparidaceae, Scilleae, Scropherbariaceae; genera like *Nicotiana, Datura, Capsicum, Sesamum,* etc. Studied cytogenetics to understand the phylogeny of the heterozygous, polyploid sugarcane through intergeneric crosses involving *Saccharum, Sclerostachya and Narenga* and to indicate that five chromosomes of three genera have a common origin. In certain crosses, the reciprocal differences with reference to important economic characters like sucrose content and yield have been found to be statistically significant suggesting cytoplasmic inheritance. Genetical analysis of the single quantitative character revealed that they did not conform to either monogenic or digenic inheritance. Cytogenetical studies on the crop have led to the conclusion that the formation of diploid eggs and in case of chromosome elimination, the doubling of the surviving groups believed to be due to post-meiotic endomitosis.

Memberships: Fellow: London Linnaean Soc.

Raghavendra, Agepati Srinivasa

Elected: 1999
Position: Prof. & Dean, Univ. of Hyderabad
Specialization: Plant Physiology/Biochemistry; Photosynthesis; Signal Transduction
Date and Place of Birth: 17 November 1950; Cuddapah, Andhra Pradesh
Parents: A Kondappa and A Vijayalakshmamma
Spouse and Children: A Ramadevi; one *s*, one *d*
Address: Department of Plant Sciences, School of Life Sciences, University of Hyderabad,
Hyderabad 500 046, India
Tel. (040) 2301 0630 (O), (040) 2339 4088 (R), Mobile: 98491 07190
email: asrsl@uohyd.ernet.in, as_raghavendra@yahoo.com

Education: Sri Venkateswara Univ., Tirupati: BSc 69, MSc 71, PhD 75.

Career: Central Plantation Crops Res. Inst., Vittal, Karnataka: Sci. 74–76; Sri Venkateswara Univ.: Lecturer 76–82; Rubber Res. Inst. of India, Kottayam: Dy Dir 82–85; Univ. of Hyderabad: Assoc. Prof. 85–96, Prof. 96–.

Scientific Work: Contributed significantly towards discovery of several C_4 plants, C_3–C_4 intermediates; regulation of C_4-phosphoenolpyruvate essentiality of mitochondrial respiration for optimizing photosynthesis; and mitochondrial enrichment in bundle sheath cells as the basis of reduced photorespiration in C_3–C_4 intermediates. Established an active research group to study photosynthetic carbon assimilation initially from S V University, Tirupati and later at the University of Hyderabad. After the initial work on the characterization of C_4 photosynthesis, work extended into the mechanisms of stomatal function. Some of the techniques of isolating active mesophyll protoplasts from pea and monitoring pH in plant cells proved to be very popular and innovative.

Important Publications: **(1)** Nitric oxide production occurs after cytosolic alkalinization during stomatal closure induced by abscisic acid (2008) *Plant Cell Environ.* **31**, 1717–1724. **(2)** Multiple factors mediate the cross talk between mitochondrial metabolism and photosynthetic carbon assimilation: Roles of photorespiratory CO_2 and ascorbate (2008) *Photosynthesis. Energy from Sun,* 14th International Congress on Photosynthesis, Springer, 1065–1070. **(3)** Hydrogen peroxide production is an early event during bicarbonate induced stomatal closure in abaxial epidermis of *Arabidopsis* (2007) *Planta* **225**, 1421–1429. **(4)** Nitric oxide is a signalling intermediate during bicarbonate-induced stomatal closure in *Pisum sativum* (2007) *Physiol. Plant.* **130**, 91–98. **(5)** Preparation of *Arabidopsis* mesophyll protoplasts with high rates of photosynthesis (2007) *Physiol. Plant.* **129**, 579–686.

Memberships: Alexander von Humboldt Foundation Fellowship, Germany. Fellow: NASI 96; NAAS 98; INSA 2002; TWAS 2006.

Awards & Distinctions: INSA Young Scientist 77 • Young Scientist in Botany, A P Akademi of Sci. 76 • UGC Career Award 91–94 • J J Chinoy Gold Medal 2002 • Recognition Award 2004 • A P Sci. of the Year 2005 • INSA K Ramaiah Memorial Award 2005 • T S Sadasivan Lecture Award 2006.

Raghunathan, Madabusi Santanam

Elected: 1974
Position: Prof., DAE Homi Bhabha Chair Prof., TIFR, Mumbai
Specialization: Lie Groups; Algebraic Groups
Date and Place of Birth: 11 August 1941; Anantapur, Andhra Pradesh
Parents: M S Santanam and Ambuja
Spouse and Children: Ramaa; one s
Address: School of Mathematics, Tata Institute of Fundamental Research, Homi Bhabha Road,
Mumbai 400 005, India
Tel. (022) 2278 2366 (O), (022) 2280 4766 (R), Mobile: 98690 13389
email: msr@math.tifr.res.in

Education: Univ. of Madras: BA Hons 60, MA 61; Univ. of Bombay: PhD 66.

Career: TIFR, Bombay, School of Maths: Res. Asst, Res. Fellow, Fellow, Assoc. Prof., Prof., Sr Prof. 60–90, Distinguished Prof. 90, Prof. of Eminence, DAE Homi Bhabha Chair Prof. 2006–.

Scientific Work: Work on congruence subgroup problem and second cohomology of groups over local fields is of fundamental importance. Proved the rigidity of arithmetic subgroups in the higher dimensional case using both algebraic and differential geometric techniques. With others, constructed fundamental domains for lattices in rank one and Lie groups. Contributed to the understanding of principal bundles on affine spaces.

Important Publications: **(1)** *Discrete subgroups of Lie groups* (1972) Springer Verlag. **(2)** Cohomology of arithmetic subgroups of algebraic groups II (1968) *Ann. Math.* **87**, 279–364. **(3)** On the congruence subgroup problem (1976) *Publ. Math.* IHES **46**, 107–161. **(4)** On the congruence subgroup Problem II (1986) *Invent. Math.* **85**, 73–117. **(5)** Principal bundles admitting a rational section (1994) *Invent. Math.* **116**, 409–423.

Memberships: Fellow: INSA 75; NASI 89, Royal Soc. London 2000; TWAS; Maharashtra Acad. of Sci. • Member: Indian Mathematical Soc.

Awards & Distinctions: S S Bhatnagar Award 78 • TWAS Prize for Maths 91 • Ramanujan Medal 91 • S N Bose Research Prof. 94–96 • Padma Shri 2001 • Aryabhata Medal 2006.

Raghunathan, Velayudhan Anandavally

Elected: 2005
Position: Assoc. Prof., RRI, Bangalore
Specialization: Soft Matter Physics; Scattering Techniques
Date and Place of Birth: 25 November 1960; Kodungallur, Kerala
Parents: M Velayudha Menon and K P Anandavally
Spouse and Children: Usha K Urs; one *d* (Divya Maya)
Address: Raman Research Institute, C V Raman Avenue, Sadashivanagar, Bangalore 560 080, India
Tel. (080) 2361 0124/475 (O), (080) 2344 8940 (R)
email: varaghu@rri.res.in

Education: Bangalore Univ.: BSc 80, MSc 82; Mysore Univ.: PhD 90.

Career: RRI: Res. Fellow 82–91, Asst Prof. 95–99, Assoc. Prof. 99–; Univ. du Maine, CNRS: Res. Assoc. 94–95; Centre de Re Cherche Paul Pascal: Res. Assoc. 93–94.

Scientific Work: Has made significant contributions to the determination of the structure and phase behaviour of many soft matter systems such as lipid bilayers, polyelectrolyte–surfactant complexes, liquid crystals and colloidal dispersions, from extensive small angle X-ray and neutron scattering experiments. Has also contributed to the theoretical understanding of phase transitions in lipid bilayers, interparticle interactions in nematic solvents, and the response of nematic liquid crystals to external electric fields. Research interests have been in soft matter systems like lipid bilayers, colloidal dispersions and liquid crystals. Main contributions are: determination of structures of LC and ripple phases of lipid bilayers; experimental observation of thermal unbinding of a membrane stack; Landau theory of phase transitions in lipid bilayers, that has been successful in explaining many experimental observations; determination of structures of DNA–surfactant complexes; observation of phase transitions in colloidal dispersions in a nematic solvent due to a novel attractive interparticle interaction; a linear stability analysis of electroconvection in nematics, which established the important role of flexoelectricity.

Important Publications: **(1)** Influence of flexoelectricity on electrohydrodynamic instabilities in nematics; (1989) *Liq. Cryst.* **5**, 1789. **(2)** Structure of the L phase in hydrated lipids (1995) *Phys. Rev. Lett.* **74**, 4456. **(3)** Colloidal dispersions in a liquid crystalline medium (1996) *Mol. Cryst. Liq. Cryst.* **288**, 181. **(4)** Role of tilt order in the asymmetric ripple phase of phospholipid bilayers (2001) *Phys. Rev. Lett.* **87**, 55705. **(5)** A cholesterol-induced modulated phase in phospholipid membranes (2003) *Phys. Rev. Lett.* **91**, 98–102.

Rai Choudhuri, Arnab

Elected: 2005
Position: Prof., IISc, Bangalore
Specialization: Theoretical Astrophysics; Magnetohydrodynamics; Solar Physics
Date and Place of Birth: 9 November 1956; Kolkata
Parents: Sunil Rai Choudhuri and Sulekha
Spouse and Children: Mahua Ghosh; two *s* (Arka, Mukul)
Address: Department of Physics, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2360 3481 (O), (080) 2360 3664 (R)
email: arnab@physics.iisc.ernet.in

Education: Calcutta Univ., BSc 78; IIT Kanpur: MSc 80; Univ. of Chicago, PhD 85.

Career: High Altitude Observatory, USA: Vis. Sci. 85–87; IISc: Lecturer 87–90, Asst Prof. 90–96, Assoc. Prof. 96–2002, Prof. 2002–, Convener, Joint Astron. & Astrophys. Prof. 2000–.

Scientific Work: Is a theoretical astrophysicist working on MHD problems in astrophysics – primarily related to the Sun, although he has worked on other astrophysical systems like AGNs, jets, accretion and pulsars as well. Has written the maximum number of papers on two subjects: (i) the generation of solar magnetic fields by the dynamo process and (ii) the formation of sunspots by the buoyant rise of flux tubes. Is one of the originators of the flux transport dynamo model for sunspot cycles. Has developed a methodology for predicting the strength of a sunspot cycle before its onset.

Important Publications: **(1)** A theoretical model for the tilts of bipolar magnetic regions (1993) *Astron. Astrophys.* **272**, 621–633. **(2)** The solar dynamo with meridional circulation (1995) *Astron. Astrophys. Lett.* **303**, L29–L32. **(3)** The physics of fluids and plasmas: An Introduction for astrophysicists (1998) Cambridge University Press. **(4)** Explaining the latitudinal distribution of sunspots with deep meridional flow (2002) *Science* **296**, 1671–1673. **(5)** Predicting solar cycle 24 with a solar dynamo model (2007) *Phys. Rev. Lett.* **98**, 131103.

Memberships: Alexander von Humboldt Fellowship 94 • Member: National Committee, IAU 2000–03; IUCAA 2002 • Fellow: NASI.

Awards & Distinctions: Univ. of Chicago Valentine Telegdi Prize 81.

Rai Choudhury, Sudhendu

Elected: 1985
Position: Prof., Jamia Milia Islamia, New Delhi
Specialization: Particle Physics
Date and Place of Birth: 7 August 1941; Ranchi, Bihar
Parents: Prabhat Ranjan Rai Choudhury and Indu Prabha
Spouse and Children: Pompa; two *d*
Address: Centre for Theoretical Physics, Jamia Milia Islamia, New Delhi 110 025, India
Tel. (011) 2696 7762 (R), Mobile: 98185 57620
email: src@jamia-physics.net, pompa@vsnl.com

Education: Univ. of Delhi: BSc Hons 60, MSc 62, PhD 65.

Career: Moscow State Univ., USSR: UNESCO Fellow 65–66; Princeton Univ., USA: Postdoc Fellow 66–68; Univ. of Michigan, USA: Lecturer 68–69, Sr Res. Assoc., Vis. Asst Prof. 72–73; Univ. of Delhi: Reader, Prof. of Phys. 83–2006; Jamia Millia Islamia, New Delhi: Prof 2006–; ICTP, Italy: Assoc. Member 70–72, Sr Assoc. 81–86; Univ. of Michigan: Vis. Prof. 97; DST Ramanna Fellow 2007–10.

Scientific Work: Research work mainly in field theory. Presently working on non-perturbative methods in particle physics especially in weak interactions. Current research interest is *B* physics. Has also been interested in writing school textbooks for the NCERT.

Important Publications: **(1)** CP violation in the *B* to $K\, l^{+} l$ decay (2007) *Eur. Phys. J.* **C49**, 657–664. **(2)** Little Higgs model effects on gamma–gamma collider (2006) *Phys. Rev.* **D73**, 115002. **(3)** Lepton number violation via intermediate black hole processes (2006) *Mod. Phys. Lett.* **A21**, 2561. **(4)** Analysis of the $B \to K_2^*(\to K\pi)\, l^+ l^-$ decay (2006) *Phys. Rev.* **D74**, 054031. **(5)** Lepton number violation in the Little Higgs model (2007) *Phys. Rev.* **D75**, 055011.

Rai, Shyam Sundar

Elected: 1996
Position: Prof., IISER, Kolkata
Specialization: Seismology ;Electromagnetic Exploration
Date and Place of Birth: 16 March 1954; Varanasi, Uttar Pradesh
Parent: Uma Shankar Rai
Spouse and Children: Asha; two *s*
Address: Indian Institute of Science Education & Research (IISER-K), Mohanpur Campus,
Post BCKV – Main Campus, Mohanpur 741 252, India
Tel. (033) 2334 4114 (O), Mobile: 94336 90672
email: shyamsrai@gmail.com

Education: BHU: BSc Hons 73; Univ. of Roorkee: MTech 77; Indian School of Mines: PhD 88.

Career: NGRI, Hyderabad: Sr Sci. Asst 78–81, Sci. 81–2009; IISER Kolkata: Prof. 2009–.

Scientific Work: Made enduring contributions to our knowledge of the internal structure and dynamics of the earth beneath the Indian subcontinent and to the development of advanced electromagnetic techniques and conceptually sophisticated data interpretation approaches for targeting discrete mineralized zones in the subsurface. Over the past two decades, has made sustained contributions to progressively refining the seismic images of the earth's interior through an imaginative identification of significant outstanding questions relating to earth's early as well as ongoing processes and designing high resolving seismic experiments to image conceptually anticipated relicts of these in the deep earth of the Indian continent. These contributions together sum up to a most cogent and systematic geophysical effort to create deep earth images of the region that modern knowledge and technology allows.

Important Publications: **(1)** High crustal seismic attenuation in Ladakh-Karakoram (2009) *Bull. Seism. Soc. Am.* **99**, 1. **(2)** Crust and mantle beneath western Himalaya, Ladakh and western Tibet from integrated seismic data, (2008) *Earth Planet. Sci. Lett.* **271**, 65–87. **(3)** Thickness, composition and evolution of the Indian precambrian crust (2008) *Precambrian Res.* **162**, 4–15. **(4)** Configuration of the Indian Moho beneath the N W Himalaya and Ladakh (2006) *Geophys. Res. Lett.* **33,** 5, L15308. **(5)** Crustal shear velocity structure of the south Indian shield (2003) *J. Geophys. Res.* **108**, B2, 2088.

Memberships: Fellow: NASI 2005; INSA 2009; American Geophysical Union.

Awards & Distinctions: S S Bhatnagar Prize 96 • Andhra Pradesh Scientist Award 2006 • National Mineral Award 2004 • M S Krishnan Medal 91 • CSIR Young Scientist Award 88.

Raj, Mahindra*

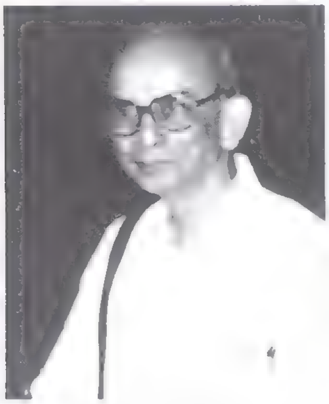
Elected: 1974
Specialization: Aerodynamics; Design; Management
Date and Place of Birth: 15 February 1925; Maghiana, West Punjab
Parents: Dewan Chand and Paravati
Spouse: Peggy
Last Address: Apartment No. 3.2, 13/1, Hayes Road, Bangalore 560 025, India
***Deceased:** 16 February 1995

Education: Univ. of Punjab: BSc Hons 45, MSc 46; Imperial College of Sci. and Technol., London: Studies in Aeronautics and Res. 49; Royal Aeronautical Soc., London: Graduate 48.

Career: De Havilland, UK: Project Aerodynamicist 50–53; Sir Godfrey and Partners, UK: Res. Eng. 53–54; D Napier, UK: Sr Aerodynamicist and Sr Thermodynamicist 55–57, Chief Aerodynamicist and Head of Flight Testing 57–59; HAL, Bangalore: Chief Experimental Testing 59–60, Sr Designer, Basic Jet Trainer HJT 16 and Head of Advanced Projects 61–70, General Manager & Chief Designer of Helicopter Dn 71–74, Aircraft Dn General Manager 75–77, Design and Development Managing Dir 77–83; Ministry of Defence, New Delhi: Sci. Adviser, Chief Design Consultant 83–84; ADA, Bangalore: Dir General, Chief Design Consultant LCA 85; NAL, Bangalore: Consultant to Civil Aircraft Projects 88–89, Emeritus Sci. 90–95.

Scientific Work: Conducted design feasibility studies and conceptualized aircraft and weapon systems related to bombers, fighters, air to air missiles, anti-submarine warfare, high altitude rocket and ram-jet test vehicles, cooling systems for supersonic fighter cockpits, anti-icing/de-icing flight development work for civil aircraft and flight development of turbo-propeller and turbo-shaft engines for civil aircraft and helicopter applications in UK. Carried out advanced research and design work on supersonic propellers whilst in UK; work at HAL, has covered practically all design and development activity involving analytical, design and test work on the HJT 16 trainer, commissioning of low speed wind tunnel, variants of HF24 fighter, transonic and supersonic ground attack fighter, intake testing of HF24, STOL-type transport-cum freighter for civil and military, Advanced Light Helicopter, Light Combat Aircraft, and finally on the Light Transport Aircraft.

Raja Gopal, Erode Subramanian



Elected: 1974
Position: Emeritus Sci., IISc, Bangalore
Specialization: Solid State Physics; Statistical Physics; Instrumentation
Date and Place of Birth: 12 May 1936; Salem, Tamil Nadu
Parents: E R Subramanian and Kamalammal
Spouse and Children: Sakuntala; one *d*, one *s* (Jaya, Mani)
Address: Department of Physics, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2293 2529 (O), (080) 2334 7449 (R), Mobile: 98800 93745
email: gopal@physics.iisc.ernet.in

Education: Univ. of Madras: MA 56, MSc 58; IISc, Bangalore: PhD 61.

Career: Univ. of Oxford, UK Royal Commission 1851 Exhibition Scholar 61–64; IISc, Bangalore, Dept of Phys.: CSIR Pool Offr 64–65, Asst Prof. 65–69, Prof. 69–91, Dean, Faculty of Sci. 75–77, Chmn 77–80, Regional Instrumentation Centre: Chmn 84–90; NPL, New Delhi: Dir 91–97.

Scientific Work: First to evaluate all the 21 elastic constants of a triclinic crystal–copper sulphate pentahydrate. In critical point phenomena, observed first the breakdown of the rectilinear diameter law near the critical temperature of binary liquid systems, arising out of the deviations from the particle-hole symmetry of the system. Observed the rigidity percolation thresholds in amorphous chalcogenide glasses at high pressures and low temperatures.

Important Publications: **(1)** Elastic constants of triclinic copper sulphate pentahydrate crystals (1971) *J. Phys.* **D4**, 171–173. **(2)** Two phase asymmetry in the phase diagram of critical binary liquid systems $CS_2 + CH_3NO_2$ and $C_6H_6 + (CH_3COO)_2O$ (1976) *Proc. R. Soc. London* **350A**, 91–106. **(3)** Equilibrium critical phenomena in binary liquid mixtures (1983) *Phys. Rep.* **98**, 57–143. **(4)** Mechanical and chemical thresholds in IV-VI chalcogenide glasses (1989) *Phys. Rev. Lett.* **62**, 808–810. **(5)** Statistical mechanics and properties of matter (1974) Ellis Horwood UK and John Wiley, New York, pp. viii + 328.

Memberships: Fellow: INSA 81; NASI 92; Inst. of Phys, UK • Acoustical Soc. of India; Ultrasonic Soc. of India; Instrument Soc. India; Indian Cryogenics Council.

Awards & Distinctions: S S Bhatnagar Award 78 • C V Raman Award 79–80 • NRDC Inventions Promotion Award 84 • Homi Bhabha Medal 1994 • ISOI Life Time Achievement Award 2006 • IISc Distinguished Alumni Award 2009 • President: Indian Cryogenics Council 86–88 • Instrument Soc. of India 93–97; Acoustical Soc of India 90–9 2 • Indian Soc. for Mass Spectrometry 92–95; Meteorology Soc. of India 94–98.

Rajagopal, Cadambathur Tiruvenkatacharlu*

Elected: 1975
Specialization: Pure Mathematics; Classical Analysis
Date of Birth: 8 September 1903
Parents: Cadambathur Tiruvenkatacharlu and Padmamma
Spouse and Children: Rukmini; one s (C R Srinivasan)
Last Address: The Anchorage, Agaram Road, Tambaran East, Madras 600 059, India
***Deceased:** 25 April 1978

Education: Univ. of Madras: BA Hons 25.

Career: Accountant General's Office, Madras: 29–30, Univ. of Annamalai, Dept of Mathematics: Lecturer 30–31; Madras Christian College, Madras: Lecturer 31–51; Ramanujan Inst. of Maths, Madras: Researcher 51–55, Dir 55–69.

Scientific Work: In summability methods, work related to Tauberian theorems involving generalization and unification of results. Examples of exhaustive studies would be to go to the equality of the oscillations of a sequence and its transform rather than stopping with the conclusion of convergence. In functions of a complex variable, concentrated on entire functions and gave exhaustive information on orders and types of such functions. One among the important contributions was proof of existence of the solution g of the functional equation $g(z + v) - lg(z) = f(z)$, where f is an entire function of order ρ and type s and v, l not equal to zero are fixed constants, when g is required to be of the same order and type. In the history of medieval Kerala mathematics, established the conviction of western scholars that medieval Kerala mathematicians had sown seeds of mathematical analysis at least two centuries earlier to Newton and Liebniz.

Memberships: Fellow: INSA 64; Inst of Advanced Sci.

Rajagopalan, Sundarapandium Rama

Elected: 1974
Position: Adviser, NAL, Bangalore
Specialization: Electrochemistry
Date and Place of Birth: 30 December 1931; Madurai, Tamil Nadu
Parents: S Rama Iyengar and Mohanavalli
Spouse: Indira
Address: Surface Engineering Division, National Aerospace Laboratories, Bangalore 560 017, India
Tel. (080) 2508 6245 (O), (080) 2557 6755 (R),
email: rajam@css.nal.res.in

Education: Univ. of Madras: BSc 52; IIT, Madras: PhD 70.

Career: American College, Madurai: Demonstrator 52–53; CECRI, Karaikudi: Jr Lab Asst 53–56, Sr Lab Asst 56–57, Jr Sc. Asst 57–59, Sr Sci. Asst 59–63, Sci. 63–68; NAL, Bangalore: Sci. 68–91, Emeritus Sci. 92–, Adviser; IISc, Bangalore: Hon. Vis. Sci. 77–78; RRI, Bangalore: Hon. Prof. 88–91.

Scientific Work: Developed a theory for the optical properties of nanocomposite of electrodeposited metal and dielectric. Validated this by studies on black nickel and black chromium. Using this, developed a room temperature black chromium plating bath. Developed novel techniques for the elimination of charging current in DC, AC and pulse polarography. Developed a process for the deposition of extremly soft nickel in thick layers for use as gasket in seal disc of nuclear reactors. Development of a process for the manufacture of large size aluminium mirrors has contributed to self reliance in critical area. Developed the procedures for designing and fabrication of equipment for electrochemical machining and successfully developed its application for the manufacture of nozzle rings of turbo charges of diesel locos. Invented a cutting machine based on arching in electrolyte.

Memberships: Fellow: ECSI, Bangalore.

Awards & Distinctions: VASVIK Award 86 • CSIR Technology Award 91 • Mascot N M Sampat Award 88.

Rajamani, Vedharaman

Elected: 1990
Position: Prof. of Geology, School of Environmental Sci., JNU, New Delhi
Specialization: Geochemistry; Rock Weathering; Soil/Sediment Genesis; Farmland Geology
Date and Place of Birth: 20 August 1944; Thinniam, Trichy, Tamil Nadu
Parents: T S Vedharaman and Saraswathi
Spouse and Children: Usha; one *d*
Address: School of Environmental Sciences, Jawaharlal Nehru University, New Delhi 110 067, India
Tel. (011) 2670 4311 (O), (011) 2689 3159 (R)
email: rajav_46@yahoo.com

Education: Univ. of Madras: BSc 66; IIT Bombay: MSc 69; State Univ. of New York, USA: MS 72, PhD 74.

Career: State Univ. of New York, USA: Res. Asst 70–74; Univ. of Toronto, Canada: Res. Assoc. 74–76, Lecturer 76–77; JNU, New Delhi: Asst Prof. 77–79, Assoc. Prof. 79–86, Prof. 86–.

Scientific Work: By determining mineral structures containing transition metal ions and by applying crystal field and molecular orbital theories, explained the distribution of transition metals during rock and ore forming igneous processes. Using an integrated approach to the geology of the Kolar Schist Belt, suggested that komatiitic magma could be derived from deep mantle diapirs by different and low (< 25%) extents of partial melting; tholeiitic magmas associated with komatiites could be derived from shallow mantle sources enriched in komatiitic components; a major part of the granitic rocks in the area was derived from mantle sources enriched in fluid components; melt addition before melt extraction is possibly a common magmatic process; the Kolar belt represents a late Archean suture where discrete continental and oceanic terranes were juxtaposed by plate tectonic processes similar to those of present day; and gold deposits were formed here during the terrane accretionary processes as well as by volcanic exhalative processes again similar to those of modern oceans.

Memberships: Fellow: INSA 99; GSI.

Awards & Distinctions: M S Srinivasa Rao Award 90.

Rajan, Conjeeveram Srirangachari

Elected: 2005
Position: Prof., TIFR, Mumbai
Specialization: Automorphic Forms; Arithmetic Geometry; Representation Theory
Date and Place of Birth: 21 May 1961; Chengalpattu, Tamil Nadu
Parents: Conjeevaram Srirangachari and Chudamani Ammal
Spouse and Children: Meera; two *d*
Address: School of Mathematics, Tata Institute of Fundamental Research,
Homi Bhabha Road, Mumbai 400 005, India
Tel. (022) 2278 2665 (O), (022) 2280 4643 (R)
email: rajan@math.tifr.res.in

Education: IIT Kanpur: MSc 84; Mumbai Univ.: PhD 94.

Career: Mc Gill Univ., Canada: Postdoc Fellow 94–96; TIFR: Fellow 97–2001, Res. Assoc. 93–97, Reader 2001–03, Prof. 2003–.

Scientific Work: Conjectures and evidence towards them that the arithmetic and spectrum of arithmetical locally symmetric spaces mutually determine each other. A unique factorization theorem for the tensor product of irreducible finite dimensional representations of complex simple Lie algebras. Began a study of the cohomology of Weil groups. Characterized the image of solvable base change for GL(2). Established refined forms of strong multiplicity one theorems for *l*-adic representations.

Important Publications: **(1)** On the vanishing of the measurable Schur cohomology groups of Weil groups (2004) *Compos. Math.* **140**, 84–98. **(2)** Congruences for rational points of varieties over finite fields (2005) *Math. Ann.* **333**, 797–809. **(3)** Unique decomposition of tensor products of irreducible representations of simple algebraic groups (2004) *Ann. Math.* **160**, 683–704. **(4)** On the image and fibres of solvable base change (2002) *Math. Res. Lett.* **9**, 499–508. **(5)** On isospectral arithmetical spaces (2007) *Am. J. Math.* **129**, 791–806.

Awards & Distinctions: B M Birla Science Award 2000.

Rajappa, Srinivasachari

Elected: 1982
Specialization: Synthetic Organic Chemistry
Date and Place of Birth: 22 February 1934; Madras
Parents: R Srinivasachari and S Pushpavalli Ammal
Spouse and Children: Padmini; one *d* (Gayatri)
Address: B-1, Melody Apartments, Plot No. 12, ICS Colony, Pune 411 007, India
Tel. (020) 2553 6395 (R), Mobile: 98901 47478
email: p_rajappa@vsnl.com

Education: Univ. of Madras: BSc 52, BSc Hons 54, MA 55, PhD 58.

Career: Presidency College, Madras: Postdoc Fellow 58–60; IIT Madras: Lecturer 60–62; Florida State Univ., USA: Postdoc Res. Assoc. 62–63; Harvard Univ., USA: Postdoc Res. Assoc. 63–64; Hindustan CIBA-GEIGY Res. Centre, Bombay: Sci. 64–74, Asst Mgr 75–76, Group Leader, Mgr 77–86; May and Baker, India: Head of Res. 86–87; NCL, Pune: Head of Organic Chem. Dn, Synthesis 88–94, Emeritus Sci. 94.

Scientific Work: Research relating to synthesis of cyclodipeptide monoimino ethers and using them as novel chiral synthons; a novel synthesis of thiophenes and thiazoles; synthesis and structural studies on push–pull systems, especially nitroenamines; discovery of a versatile synthesis of nitroacetamides and the elusive nitrothioacetamides from nitroenamines; use of nitroacetyl group as a novel peptide synthon; new synthetic strategies for carbamates and thiocarbamates, including a viable non-MIC route to carbamate pesticides; the first demonstration of the existence of non-bonded attractive interactions involving sulphur in the solution phase.

Important Publications: **(1)** Nitroenamines: An update (1999) *Tetrahedron* **55**, 7065. **(2)** From *N*-nitroacetylproline to leucylproline (1991) *J. Chem. Soc. Chem. Comm.* **372**. **(3)** Synthesis of dipeptides via addition of *N*-(nitroacetyl) amino-acid derivatives to Michael acceptors: Scope, stereoselectivity and absolute configuration (1992) *Helv. Chim. Acta* **75**, 715. **(4)** Synthesis of cyclic hydroxamic acids from aliphatic nitro compounds (1995) *Tetrahedron* **51**, 10571. **(5)** Ranitidine intermediate: Zeolites in organic syntheses: A novel route to functionalised ketene *S*, *N*-acetals (1990) *J. Chem. Soc. Perkin Trans.* **1**, 1217.

Memberships: Fellow: INSA 85; Maharashtra Acad. of Sci.

Awards and Distinctions: MS Univ. K G Naik Gold Medal: UDCT Distinguished Fellow 87–92 • CRSI Lifetime Achivement Award 2009.

Rajaraman, Ramamurti

Elected: 1978
Position: Prof. Emeritus, JNU, New Delhi
Specialization: Theories of Elementary Particles; Quantum Field Theory and Many-Body Theory; Nuclear Disarmament
Date and Place of Birth: 11 March 1939; Coimbatore, Tamil Nadu
Parents: B Ramamurti and Visalam
Spouse and Children: Indira; one *d*
Address: School of Physical Sciences, Jawaharlal Nehru University, New Delhi 110 067, India
Tel. (011) 2674 2507, (011) 2670 4785 (O), (011) 2612 3485 (R), Mobile: 98181 60651
email: doug0700@mail.jnu.ac.in, prof_rajaraman@yahoo.com
URL: http://www.jnu.ac.in/Faculty/rajaraman

Education: Delhi Univ.: BSc Hons 58; Cornell Univ., USA: PhD 63.

Career: Cornell Univ., USA: Res. Assoc. 63, Instructor-Res. Assoc. 63–64, Asst. Prof. 64–65; TIFR, Bombay: Res. Assoc. 63; Univ. of South California, USA: Asst Prof. 65–67; Inst. of Advanced Study, USA: Member 67–69, 73–75; Delhi Univ.: Reader 69–76; Centre for Theoretical Studies, IISc, Bangalore: Prof. 76–93; School of Physical Sciences, JNU, Delhi: Prof. 94–2004, Emeritus Prof. 2004–.

Scientific Work: Research relates to three-body theory in nuclear matter; particle physics phenomenology and electroproduction; theory of charged quantum solitons; quantization of anomalous gauge theory; absence of topological anomaly, and clarification of fractional charge in polyacetylene. Public policy research relates to nuclear arms control, fissile materials, and the Indo-US nuclear agreement.

Important Publications: **(1)** *Solitons and instantons* (1982) Elsevier, North Holland Co. **(2)** Some non-perturbative semi-classical methods in quantum field theory (1975) *Phys. Rep.* **21**, 4. **(3)** On solitons of half-integral charge (1982) *Phys. Lett.* **116B**, 151. **(4)** Fallout from the nuclear deal (2006) *The Economic and Political Weekly* 3351. **(5)** The three-body problem in nuclear matter (1967) *Rev. Mod. Phys.* **39**, 745.

Memberships: Fellow: INSA 85 • Co-Chair: Intl Panel on Fissile Materials.

Awards & Distinctions: S S Bhatnagar Award 83 • G P Chatterjee Memorial Lecture Award 89 • S N Bose Medal 95.

Rajaraman, Vaidyeswaran

Elected: 1974
Position: Hon. Prof., IISc, Bangalore
Specialization: Computer Science; Information Systems Design
Date and Place of Birth: 8 September 1933; Erode, Tamil Nadu
Parents: R Vaidyeswaran and Sarada
Spouse: Dharma
Address: Supercomputer Education and Research Centre, Indian Institute of Science,
Bangalore 560 012, India
Tel. (080) 2360 0811 (O), (080) 2341 9672 (R)
email: rajaram@serc.iisc.ernet.in; URL: http://www.serc.iisc.ernet.in/~rajaram/

Education: Univ. of Delhi: BSc Hons 52; IISc, Bangalore: DIISc 55, AIISc 57; MIT, USA: SM 59; Univ. of Wisconsin, USA: PhD 61.

Career: Univ. of Wisconsin, USA, Dept of Electrical Engg: Res Asst 60–61, Asst. Prof. of Statistics 61–62; IIT Kanpur, Electrical Engg Dept and Computer Centre: Asst. Prof. 63–65, Assoc. Prof. 66–68, Prof. 68–72, Sr Prof. 72–82; IISc, Bangalore, Super Computer Education and Res. Centre: Chmn and Prof. 82–94, Hon. Prof. 95–; JNCASR, Bangalore: IBM Prof. of Information Technol. 94–2000.

Scientific Work: Research work spans diverse areas of computer science: software design, hardware design and applications of computers. Significant contributions include formulation of data flow-oriented specification methods for information systems, new algorithms for logical error detection in decision table programs and in microcomputer applications in real-time control Designed and developed hardware and software for inexpensive parallel computers.

Important Publications: **(1)** Information theory applied to the conversion of decision tables to computer programs (1973) *Comm. ACM (USA)* **16**, 9, 532–39. **(2)** Detection of logical errors in decision table programs (1976) *Comm. ACM (USA) 21*, 12, 1016–1024. **(3)** An algorithm to decide feasibility of linear integer constraints occurring in decision tables (1987) *IEEE Trans. Software Eng.* **SE13**, 12, 1340–1347. **(4)** A FIFO based multicast network and its use in multicomputers (1991) *Microprocessors and Microsystems* **15**, 10, 543–547. **(5)** Implementation of speculative parallelism in functional languages (1994) *IEEE Trans. Parallel and Distributed Systems* **5**, 11, 1197–1205.

Memberships: Fellow: INSA 82; INAE 87; NASI 90; Computer Soc. of India; Institute of Engineers, India; IETE.

Awards & Distinctions: S S Bhatnagar Award 76 • Homi Bhabha Award 84 • UP Govt National Award 88 • IISc Rustom Choksy Award in Engg Sci. • INSA Zaheer Medal 98 • Padma Bhushan 98 • INAE Lifetime Contributions Award in Engg 2005 • Om Prakash Bhasin Award 93.

Rajasekaran, Guruswamy

Elected: 1983
Position: Adjunct Prof.
Specialization: Quantum Field Theory; High Energy Physics
Date and Place of Birth: 21 February 1936; Kamuthi, Ramanathapuram Dist, Tamil Nadu
Parents: S S Guruswamy Nadar and G Muthammal
Spouse and Children: R Suthandra Devi; two *d* (Poongodhai, Uma)
Address: The Institute of Mathematical Sciences, CIT Campus, Taramani, Chennai 600113, India
Tel. (044) 2254 3206 (044) 2254 1856 (O), (044) 2441 3395 (R)
email: graj@imsc.res.in

Education: Univ. of Madras: BSc Hons 57; Atomic Energy Establishment (BARC), Bombay: Training 58; Univ. of Chicago, USA: PhD 65.

Career: TIFR, Bombay: Res. Asst 58–61, Res. Fellow, Reader 64–76; Univ. of Chicago, USA: Res. Asst 61–63; Univ. of Oxford, UK: Res. Asst 63–64; Univ. of Madras: Prof. 76–84, Hon. Prof. 84–86; Inst. of Mathematical Sci., Madras: Jt Dir 84–96; Distinguished Prof. 91–2001; Raja Ramanna Fellow 2001–06; Chennai Mathematical Inst. Adjunct Prof. 2006–.

Scientific Work: Demonstrated jointly with Dalitz, that a pole of the *S* matrix is in general followed by a retinue of poles. This discovery of 'shadow poles' not only removed a serious obstacle to the application of broken symmetry to particle physics but also leads to a reformulation of a basic tenet of the *S* matrix theory. Envisaged the possibility of 'molecular hadrons' and gave an empirical test for their identification. Conjectured the confinement of massless Yang–Mills quanta much before the advent of QCD. Performed the first model-independent analysis of the experimental results, soon after the discovery of the weak neutral current. Elucidated the remarkable consequences of QCD with integrally-charged quarks. Helped reveal new effects invalidating the equivalent photon method for the production of charged particles of spin greater than half. Contributed in discovering many new forms of quantum statistics and formulating a theory of generalized Fock spaces. Wrote the first paper in neutrino phenomenology with three neutrinos that established the approximate separation of the solar neutrino and atmospheric neutrino oscillations and also fixed the upper bound on the reactor neutrino angle. Pursued the setting up of the India-based neutrino observatory.

Important Publications: **(1)** Resonance poles and mass differences within unitary multiplets (1963) *Phys. Lett.* **7**, 373. **(2)** Empirical test for composite hadrons (1972) *Phys. Rev.* **D5**, 610. **(3)** Colour gluons and scaling in a unified gauge model (1975) *Pramana – J. Phys.* **5**, 303. **(4)** Generalized Fock space, new forms of quantum statistics and their algebras (1995) *Pramana – J. Phys.* **45**, 91. **(5)** Three flavour implication of the result of the CHOOZ Collaboration (1998) *Phys. Rev.* **D58**, 031301.

Memberships: Fellow: INSA 86; NASI 91.

Awards & Distinctions: Meghnad Saha Award 87 • FICCI Award 90 • S N Bose Award 96.

Rajasekarasetty, Madhavasetty Ramalingam*

Elected: 1975
Specialization: Cell Biology; Genetics; Evolution
Date of Birth: 16 October 1919
Parents: Ramalingasetty and Lakshmidevamma
Spouse and Children: Anandalakshmi, one s (Pradeep)
Last Address: Department of Zoology, University of Mysore, Manasagangotri, Mysore 570 006, India
***Deceased:** 3 July 1982

Education: Univ. of Mysore: BSc Hons 43, MSc 45; Columbia Univ.: AM 50, PhD 52.

Career: Univ. of Mysore, Dept of Zoology: Prof. 43–79, Head 60–79.

Scientific Work: Made important contributions to our knowledge of cytology of natural populations of many species of grasshoppers and also on evolutionary cytogenetics of grasshoppers. Made notable findings on the effects of radiation on the biology of grasshopper chromosomes. The problems of speciation in general and evolutionary status of Indian *Drosophila nasuta* in particular have been probed through a series of hybridization experiments, involving Indian strains and other members of the *nasuta* subgroup. Based on this work, re-defined the systematic position of the members of this subgroup in its true evolutionary perspective. Thus the Indian and Seychelles Islands strain of *D. nasuta* are proved to be one and the same species. However the degrees of genetic divergence of *D. albomicans* and *D. kepulauana* to *D. nasuta* are such that the former becomes a chromosomal race and latter a semispecies with partial reproductive isolation within the original *D. nasuta*.

Memberships: Fellow: London Zoology Soc.; INSA 78; NASI.

Rajasekharan, Ram

Elected: 2006
Position: Dir, CIMAP, Lucknow
Specialization: Lipid Metabolism; Plant Biotechnology
Date and Place of Birth: 25 December 1960; Manamadurai, Tamil Nadu
Parents: K Ramachandran and Poongothai Ramachandran
Spouse and Children: Vasanthi; one s
Address: Central Inst of Medicinal and Aromatic Plants, PO CIMAP, Near Kukrail Picnic Spot,
Lucknow 226 015
Tel. (0522) 235 9623
email: director@cimap.res.in

Education: Madurai Kamaraj Univ.: BSc 79, MSc 81, IISc: PhD 87.

Career: Univ of Illinois, USA: Postdoc 87–89; Dupont Company, USA: Jr Sci. 89–91; New Mexico State Univ., USA: Asst Prof. 91–94; Monsanto Company, USA: Vis. Prof. 94–95; IISc: Asst Prof. 95–2001, Assoc. Prof. 2001–06, Prof. 2000–09; CIMAP, Lucknow: Dir 2009–.

Scientific Work: Has been focussing on biosynthesis of triacylglycerols (fats and oils). Seeds that store triacylglycerols (TAG) are the commercial source of plant oils for food and industrial uses. Despite their economic importance, the biosynthesis of TAG has not been fully understood. Discovered a new soluble TAG biosynthetic machinery in oilseeds that involves monoacylglycerol as an intermediate in the pathway. Monoacylglycerol is sequentially acylated by their respective acyltransferases to form TAG. The novel genes involved in the pathway have been cloned and overexpressed. These genes are considered as the potential targets for genetic manipulation for providing improved quality/quantity oils. Similar cytosolic TAG biosynthetic machinery also exists as a complex in yeast.

Important Publications: **(1)** CGI-58, The causative gene for Chanarin–Dorfman syndrome, mediates acylation of lysophosphatidic acid (2008) *J. Biol. Chem.* **283**, 24525–24533. **(2)** YLR099C (ICT1) encodes for a soluble acyl-CoA dependent lysophosphatidic acid acyltransferase responsible for enhanced phospholipid synthesis upon organic solvent stress in *Saccharomyces cerevisiae* (2008) *J. Biol. Chem.* **283**, 9768–9775. **(3)** *The Saccharomyces cerevisiae* PHM8 gene encodes a soluble magnesium dependent lysophosphatidic acid phosphatase. (2008) *J. Biol. Chem.* **283**, 8846–8854. **(4)** Cytosolic triacylglycerol biosynthetic pathway in plants: Molecular cloning and expression of peanut cytosolic diacylglycerol acyltransferase. (2006) *Plant Physiol.* **141**, 1533–1543. **(5)** Identification, purification of monoacylglycerol acyltransferase from developing peanut cotyledons (2001) *J. Biol. Chem.* **276**, 10847–10852.

Memberships: Fellow: NAAS 2003; NASI 2005 • Member: Guha Res. Conference.

Awards & Distinctions: NASI Reliance Industries Platinum Jubilee Award for Application Oriented Innovations for Biological Sciences 2008 • Natl Bioscience Award, DBT 2002 • C V Raman State Award in Life Sciences 2004 • Nagarjuna Group Agricultural Biotechnology Excellence Award 99.

Raju, Trichur Ramaswamy

Elected: 2005
Position: Prof. and Head, Dept of Neurophysiology, NIMHANS, Bangalore
Specialization: Developmental Neuroscience; Neurodegeneration; Neuronal Plasticity
Date and Place of Birth: 31 March 1952; Bangalore, Karnataka
Parents: T P Ramaswamy and Jayalakshmi
Spouse and Children: Nina; one *d* (Nirja)
Address: Department of Neurophysiology, National Institute of Mental Health & Neurosciences,
P.B. No. 2900, Bangalore 560 029, India
Tel. (080) 2699 5168 (O), (080) 2539 2148 (R), Mobile: 99802 30115
email: trraju@nimhans.kar.nic.in, trraju@gmail.com

Education: Univ. of Madras: BSc 71, MSc 74; Australian Natl Univ.: PhD 79.

Career: St John's Medical Coll., Bangalore: CSIR Res. Fellow 74–75; Aust. Natl Univ.: Res. Scholar 75–79; Harvard Univ.: Res. Assoc. 79–82; Univ. of Sydney: Sr Res. Fellow 82–89; NIMHANS: Addl Prof. 89–97, Prof. & Head 97–; Dean 2004–.

Scientific Work: Described the cytoskeletal basis of non-muscle cell motility and subcellular movements of organelles. Contributed to the understanding of development and differentiation of neurons and glia using objective cell specific markers. Described the trophic support provided by glia and target tissue for the development and differentiation of motor neurons and retinal ganglion cells. Developed and characterized a rat model for the motor neurone disease amyotrophic lateral sclerosis (ALS) and demonstrated the specific effect of cerebrospinal fluid from ALS patients on motor neurons. Defined the cellular and synaptic basis of hippocampal plasticity induced by intracranial self-stimulation and exposure to enriched environment. Demonstrated central nervous system regeneration using rat olfactory bulb as a model. Investigated the differentiation of resident stem cells to projection neurons and explored the microenvironment which promotes genesis of projection neurons in a post-natal animal. Using retina as a model, was able to demonstrate the critical roles played by target-derived trophic factors, glia, neurotransmitters and intrinsic electrical activity in bringing about neuronal survival, growth and differentiation and formation of synaptic connectivity. Has used intracranial self-stimulation and exposure to enriched environment as tools to induce plasticity in the hippocampal neurons of rats. Demonstrated structural regeneration of axotomized neurons, formation of new connectivity in the target and also functional recovery using olfactory system as a model. Generated a rat model for amyotrophic lateral sclerosis (ALA). Has shown that cerebrospinal fluid (CSF) from ALS patients injected intrathecally into new born rat spinal cords produces exactly the same pathological changes as observed in patients suffering from ALS. Able to show in this model that cyclophosphamide, L-deprenyl and a combination of ciliary neurotrophic and brain-derived neurotrophic factors confers neuroprotection to motor neurons which have been exposed to toxic factors from ALS–CSF.

Important Publications: **(1)** Selective extraction of cytoplasmic action-containing filaments with DNA-ase I. (1978) *Cytobiologie* **17**, 1, 307–311. **(2)** *In vivo* and *in vitro* differentiation of neurons and astrocytes in the rat embryo: Immunofluorescence study with neurofilament and glial filament antisera (1981) *Dev. Biol.* **85**, 344–357. **(3)** Retinal ganglion cell survival requirements: A major but transient dependence on Muller glia during development. (1986) *Brain Res.* **383**, 1–2, 165–176. **(4)** Regeneration of the olfactory tract following neonatal lesion in rats (1997) *Exp. Neurol.* **144**, 1, 174–182. **(5)** Altered *in vitro* and *in vivo* expression of glial glutamate transporter-1 following exposure to cerebrospinal fluid of amyotrophic lateral sclerosis patients (2007) *J. Neurol. Sci.* **254**, 1–2, 9–16.

Awards & Distinctions: Baldev Singh Oration 2002 • R C Shukla Oration 2000 • A K Mukherjee Memorial Oration for Outstanding Contributions in Neuroscience.

Ram Behari*

Elected: 1940
Specialization: Differential Geometry
Date and Place of Birth: 25 April 1897; Delhi
Spouse and Children: Radha Rani; four s, three d
Last Address: 7/28, Daryaganj, New Delhi 110 002, India
***Deceased:** 14 December 1981

Education: Univ. of Cambridge, UK: MA Appl. Maths 19, MA Pure Maths 20; Univ. of Dublin, Scotland: PhD 32, ScD 45.

Career: St Stephen's College, Delhi: Teaching 20–47; Delhi Univ.: Provost, Prof. and Head of Mathematics and Statistics Departments 47–62, Founder Dir Correspondence Courses 62–64; Univ. of Jodhpur: Vice Chancellor 64–66; ICMI: Offr 55–58.

Scientific Work : Made important contributions to the theory of ruled surfaces and rectilinear congruences, Riemannian spaces and generalized Riemanian spaces, complex manifolds and Einstein's unified full theory Considered the father of differential geometry in India.

Important Publications: **(1)** *Differential geometry of ruled surfaces.*

Memberships: Fellow: INSA 41 • Secretary: Indian Math. Soc. • President: Calcutta Math. Soc.; Barath Ganith Parishad; Soc. of Math. Sci.

Ram Sagar

Elected: 2001
Position: Dir, ARIES, Nainital
Specialization: Astronomy and Astrophysics; High Energy Physics
Date and Place of Birth: 1 July 1952; Azamgarh, Uttar Pradesh
Parents: Ram Nath and Basmati Devi
Spouse and Children: Kiran; four *d* (Sarita, Suman, Sunita, Neetu)
Address: Aryabhatta Research Institute of Observational Sciences (ARIES), Manora Peak,
Nainital 263 129, India
Tel. (05942) 23 5136 (O), (05942) 23 5053 (R), Mobile: 94120 85436
email: sagar@aries.ernet.in, ram_sagar0@yahoo.co.in

Education: Gorakhpur Univ.: BSc 71, MSc 73, PhD 81.

Career: UP State Observatory Nainital: Res. Fellow 73–74, Sci. Asst 74–76, Sci. Offr 76–79, Dir 96–2004; Kumaun Univ., Nainital: Lecturer 79–86; Indian Inst. of Astrophysics: Reader 86–91, Assoc. Prof. 91–98, Prof. 98–2003; Aryabhatta Res. Inst. of Observational Sci.: Dir 2004–.

Scientific Work: Successfully launched world class research projects using very modest observational facilities available in India, but supplementing them with state-of-the-art observing techniques and innovative data reduction strategy, followed by more refined observations using large international facilities, such as Hubble space telescope, etc. Results of basic importance are obtained by him in the key area of star formation and stellar evolution, which provided the first empirical evidence for the universality of the initial mass function of stars, which forms a key input to the models of galaxy evollution. The first Indian initiative to observe the optical afterglow of a gamma-ray burst. Played a key role in the first systematic search for intra-night optical micro-variability of radio-quiet quasars on hour-like or faster timescale. Actively heading major projects like 3.6 m new technology Devasthal Optical Telescope and ST Radar facility at 206.5 mega hertz.

Important Publications: **(1)** Mass and age distribution of stars in young open clusters (1986) *Mon. Not. R. Astron. Soc.* **220**, 383–403. **(2)** A study of spatial stellar mass distribution in some young open clusters (1988) *Mon. Not. R. Astron. Soc.* **234**, 831–845. **(3)** Mass functions of five young large magellanic cloud star clusters (1991) *Astr. Astrophys.* **250**, 324–339. **(4)** Temporal behaviour of emissions from γ-ray bursts and optical/near-IR afterglows of GRB 991208 and GRB 991216 (2000) *Bull. Astr. Soc. India* **28**, 15–31. **(5)** GRB 000301C with peculiar afterglow emission (2000) *Bull. Astr. Soc. India* **28**, 499–513. **(6)** Characteristics of aerosol spectral optical depths over Manora peak – A high altitude station in central Himalayas (2004) *J. Geophys. Res.* **109**, D06207.

Memberships: Royal Soc. Commonwealth Bursary Fellowship 83–84 • Alexander Von Humboldt Foundation Fellowship 89–90, 2000 • Fellow: NASI 99; Laser and Spectroscopic Soc. of India.

Awards & Distinctions: Young Astronomers Award, ASI 83–84 • ASI President 99–2000 • ASI VP 97–98.

Rama Das, Vallabhaneni Sita

Elected: 1975
Specialization: C_4 Plants; Light Regime in C4 Plants; Photosynthesis
Date and Place of Birth: 5 February 1933; Gudlavalleru, Andhra Pradesh
Parents: Venkatappaiah and Ratnamma
Spouse and Children: Ahalya; one *s*, one *d*
Address: 9, Vijetha Apartments, Nalanda College Road, Gayatri Nagar, Vijayawada 520 008, India
Tel. (0866) 249 2940 (R), Mobile: 93947 67750
email: vsrdsuntrack@rediffmail.com

Education: Andhra Univ.: BSc 51; Delhi Univ.: MSc 53; Oxford Univ., UK: DPhil 57.

Career: Univ. of Allahabad: Asst Prof. of Botany 57–60; Univ. of California, USA: Res. Plant Physiologist 59–60, Postdoc 62; Sri Venkateswara Univ., Tirupati, Botany Dept: Lecturer 60–61, Reader 61–67, Prof. and Head 70–88, Vice-Principal 77–78, Chmn and Dean 79–88; Memorial Univ. of Newfoundland, Canada: Assoc. Prof. 67–69; Centre for Photosynthetic Studies, Hyderabad: Prof. and Dir of School of Life Sci. 78–80; Univ. of Hyderabad, School of Life Sci.: Prof. 89; CSIR, Palampur: Dir 91.

Scientific Work: Research related to stomatal and non-stomatal parameters in the control of photosynthesis, and herbicide action in photosynthesis. Analyzed photosynthesis in naturally occurring C_3/C_4 intermediates, regulation electron transport, and thylakoid membrane polypeptide composition in relation to variable light regime. Elucidated the role of chloroplast organelle in the pathway of rubber biosynthesis in guayule.

Important Publications: **(1)** *Photosynthesis: Regulation under varying light regimes* (2004) Science Publishers, Inc., Enfield, New Hampshire, USA and Plymouth, UK.

Memberships: Fellow: INSA 78; NAAS 91; Indian Soc. for Plant Physiology; Indian Botanical Soc. • Member: American Soc. of Plant Physiology.

Awards & Distinctions: FICCI Award 78 • J J Chinoy Medal 78 • Birbal Sahni Gold Medal 85 • Watermall Honor Summns Medal 87.

Rama Rao, Alla Venkata

Elected: 1985
Position: Chmn. & Managing Dir, AVRA Labs Pvt. Ltd, Hyderabad
Specialization: Organic Chemistry; Medicinal Chemistry; Drug Technology
Date and Place of Birth: 2 April 1935; Guntur, Andhra Pradesh
Parents: A Subba Rao and Ranganayakamma
Spouse and Children: Hymavathi; two *s*, one *d*
Address: AVRA Laboratories Private Limited, Avra House, 7-102/54 Sai Enclave,
Habsiguda, Hyderabad 500 007, India
Tel. (040) 2717 8569, (040) 2717 8568 (O), (040) 2717 3360 (R), Mobile: 98481 35163
email: ramarao@avralab.com; URL: http://www.avralab.com

Education: Andhra Univ.: BSc 56; Bombay Univ.: BSc 60, PhD 64, DSc 87.

Career: NCL, Pune: Res. Fellow 60–65, Sci. 65–75, 77–80, Dy Dir and Head of Organic Dn 80–85; Harvard Univ., USA: Res. Assoc. 75–77; IICT, Hyderabad: Dir 85–95; Avra Laboratories Pvt. Ltd, Hyderabad: Chmn & Managing Dir 95–.

Scientific Work: Contributions to basic sciences include synthesis of anti-tumour antibiotics, immunosuppressants, beta-lactams, macrolides, cyclic peptides, etc. and more recently HIV inhibitors and chiral drugs. Efforts in applied R&D resulted in economically viable indigenous processes production of several vital drugs, important being AZT (anti-AIDS), vinblastine, vincristine, etoposide, norfloxacin and ciprofloxacin, vitamin B_6, etc.

Important Publications: **(1)** A stereo convergent synthesis of: (+) 4-dimethoxydarnomycin (1984) *JCS Chem. Comm.* 453. **(2)** Studies directed towards the synthesis of immunosuppressive agent FK506: Synthesis of entire bottom and top half (1991) *Tetrahedron Lett.* **547**, 1251. **(3)** Synthesis of fredricamycin A heterocycles (1994) 1983. **(4)** Discovery of a novel route to β-thymidine: A precursor for anti-AIDS compounds (1994) *JCS. Chem. Comm.* 1255. **(5)** Studies directed towards the synthesis of vancomycin and related cyclic peptides (1995) *Chem. Rev.* 2135.

Memberships: Fellow: INSA 86; NASI 89; TWAS 94; Maharashtra Acad. of Sci.; Andhra Pradesh Acad. of Sci. • Member: Sci. & Technical Advisory Committee of the UNDP/World Bank/WHO Special Programme for Res. and Training in Tropical Diseases; Adhoc Technical Advisory Committee on CFCs Destruction Technologies; United Nations Environmental Protection Agency.

Awards & Distinctions: K G Naik Gold Medal 82 • Amrut Mody Res. Foundation Award 84 • VASVIK Award 84 • Best Alumni Golden Jubilee Award of UDCT 85 • Ranbaxy Res. Foundation Award 87 • Homi J Bhabha Award for Res. in Applied Sci. 90 • INSA Viswakarma Medal 91 • CSIR Prize in Chemical Sci. 91 • TWNSO Prize for Technology 93 • CSIR Prize for Chemical Sci. 93 • UDCT Diamond Goyal Prize for Applied Res. 94 • CSIR Prize for Business Development & Marketing 94.

Rama Rao, Lakshmiswara*

Elected: 1934
Specialization: Geology
Date and Place of Birth: 23 March 1896; Bangalore, Karnataka
Parents: L Raghavendra Rao Deshpande and Nagu Bai
Spouse and Children: Seetha Bai; one *s*, three *d*
Last Address: Shantiniketan, H B Samaj Road, Basavanagudi, Bangalore 560 004, India
***Deceased:** 11 November 1974

Education: Univ. of Madras: BA 17; Univ. of Calcutta: MA 24.

Career: Central College, Bangalore, Dept of Geology: Prof., Head and Principal 18–53.

Scientific Work: Research on the upper cretaceous rocks found along the east coast in South India. Discovery of identifiable remains of dinosaurs, discovery of microfossils such as radiolarians in the rocks of the Utatur division, the algal genus *Archaeolithothamnium* in the Niniyur rocks, the identification of a larger foraminifer in the Pondicherry rocks as *Discocycliha* formed the main lines of early investigations. Later, was interested in cretaceous-tertiary boundary and showed that no definite line really separates the two major eras and that stratigraphers should discover more of the possible 'no-boundary' areas and try to reconstruct and present a continuous and unbroken record of geological and biological events.

Memberships: Fellow: INSA 40 • President: Indian Sci. Congress Geology Section.

Awards & Distinctions: Asiatic Soc. Pramatha Nath Bose Medal.

Rama Swamy, Subbarao*

Elected: 1935
Specialization: X-ray; Solid State Physics
Date and Place of Birth: 23 September 1907; Mysore, Karnataka
Parents: S Subba Rao and Venkatalakshamma
Spouse and Children: Mahalakshamma; five *s*
Last Address: Satsuma, 419-20, Second Link Road, Third Block, Jayanagar, Bangalore 560 011, India
***Deceased:** 30 March 1984

Education: Univ. of Mysore: BSc 27; Univ. of London: PhD 30.

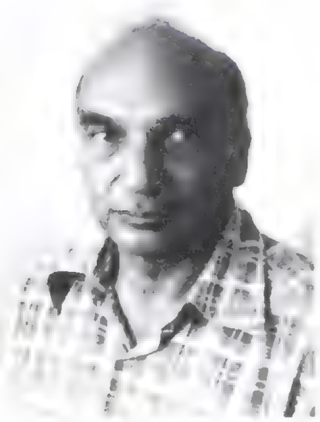
Career: Univ. College, London: Demonstrator in Phys. 30–31; IISc, Bangalore: Res. Fellow 31–38; Central College, Bangalore, Dept of Phys.: Asst Prof. 38–51, Prof. 54–63; UGC Retired Prof. 63–67; First Grade College Tumkur: Prof. 51–54.

Scientific Work: Published a number of papers on the optical properties and structure of their metallic films and on X-ray analysis of various substances. Undertook a sponsored scheme of CSIR for the study of gold–mercury system.

Memberships: Fellow: Physical Soc., London.

Awards & Distinctions: Carey Foster Prize 30.

Rama



Elected: 1969
Specialization: Isotope Hydrology
Date and Place of Birth: 16 March 1929; Nandpur Kalaur, Punjab
Parents: Shadi Ram and Shanti Devi
Spouse and Children: Prem Lata; one *s*, one *d* (Gautam Thor, Minakshi)
Address: Y-4, Sector 9, CBD, Navi Mumbai 400 614, India
Tel. (022) 2757 0081 (R)
email: rama139@yahoo.co.in

Education: Punjab Univ.: BSc Hons 49, MSc Hons 50; Bombay Univ.: PhD 62.

Career: TIFR, Bombay: Res. Student 50–51; Research Asst, Research Fellow, Fellow, Assoc. Prof., Prof. 52–89; NGRI, Hyderabad: Vis. Sci. 89.

Scientific Work: Significant contributions to instrumentation and building in particle accelerators, and investigations of interactions of primary and secondary cosmic rays; geochronology of Deccan traps using K–Ar method of dating, and use of environmental radioisotopes in problems in meterology, hydrology and oceanography. Conceived and implemented the use of radon in delineating the circulation of Indian summer monsoon. Conceived and proved the validity, of the proposition of using the aquifers connected to the seasonal streams in Indo-Gangetic plains for storing surplus flood waters of these streams. Elucidated the mechanism of emanation of radon gas from common minerals in the terrestrial rocks leading to the discovery of existence of connected network of very fine fractures, in most granites and in mineral grains.

Memberships: Fellow: INSA 88; NAAS 91.

Ramachandra Rao, Barry*

Elected: 1974
Specialization: Space Physics; Ultrasonics
Date and Place of Birth: 21 November 1922; Yelamanchili, Andhra Pradesh
Parents: Barry Satyanarayana and Subhadramma
Spouse and Children: Susila Devi; one s
Last Address: 407, SK's Fort House, 1-1-572, Golkanda X Roads, Hyderabad
***Deceased:** 24 September 2005

Education: Andhra Univ.: BSc Hons 44, MSc 45, DSc 49.

Career: Andhra Univ., Dept of Phys., Visakhapatnam: Demonstrator 44–48, Lecturer 50–51, Reader 55–58, Prof. 58–76; UGC: Vice Chmn 76–82; Dept of Geology: CSIR Sr Res. Fellow 48–50; Ionosphere Lab., CSIRO, Australia: Commonwealth Sr Res. Fellow 51–52, Reader 53–58, Prof. 58–76; UGC, New Delhi: Vice-Chmn 76–82; Member, Rajya Sabha 82–88; National Fisheries Advisory Board: Chmn 89; Educational Consultants India Ltd 93.

Scientific Work: Worked on diffraction of light by high frequency ultrasonic waves and extended the studies up to 200 MHz while the maximum limit at that time was 50 MHz. Extended the range of studies up to 400 MHz the highest limit achieved so far; a special feature of the diffraction phenomenon discovered in this very high frequency region is the unusual behaviour of diffraction pattern which follows the Bragg law diffraction. Derived theoretical formulae to explain the dependence of diffracted light with angle of incidence. Another discovery was the unusual behaviour of diffraction of light by superposed ultrasonic waves whose frequencies are in the harmonic ratios of 1:2 or 1:3 at normal incidence. Discovered new methods of measurements of elastic constants in solids, velocities in liquids and temperature in viscous liquids. Established new relations between molar sound velocity and molecular structure. Carried out studies on ionospheric regularities, travelling ionospheric disturbances (TIDs), ionospheric absorption, polarization of radiowaves in the ionosphere, the sporadic-E (Es), the spread F, morphology of the ionosphere, meteor wind radar studies, the VHF meteor forward scatter propagation.

Important Publications: (1) Elastic constants of garnets (1945) *Proc. Indian. Acad. Sci.* A22, 194–198. (2) Diffraction of light at very high frequency ultrasonic waves, Effect of tilting the wave front (1948) *Proc. Indian Acad. Sci.* 28, 54–62. (3) A new type of ionospheric drift recorder (1961) *J. Atmos. Terr. Phys.* 21, 208. (4) A new method of studying variation of ultrasonic absorption in liquids (1958) *Nature* 182, 1794. (5) Balanced bridge thermocouple circuit for measurement of crystal currents (1962) *J. Sci. Ind. Res.* B21, 331.

Memberships: Fellow: INSA 69; NASI 79 • President: ISCA 83.

Awards & Distinctions: S S Bhatnagar Award 65 • ISCA Disting. Service Award 68 • Andhra Univ.: DSc (hc) 70.

Ramachandra Row, Lakkaraju*

Elected: 1974
Specialization: Chemistry of Natural Products
Date and Place of Birth: 14 December 1916; Ravipadu, West Godavari, Andhra Pradesh
Children: one *s*, five *d*
Last Address: Saroja, 10-2-9/3, Siripuram, Waltair 530 003, India
***Deceased:** 22 September 1991

Education: Andhra Univ.: BSc Hons 38, MSc 39, DSc 45.

Career: Andhra Univ., Dept of Chem.: Demonstrator 39–43, Micro Analyst 43–46, Lecturer 46–53, Reader 53–63, Prof. 63–67, Head of Chem. 68, Emeritus Prof. 77, 81; PG Centre, Waltair: Head of Chem. and Principal 67–68; Andhra Univ. College of Sci. & Technol., Waltair: Principal 76; Andhra Univ., PG Courses: Special Offr 77–80.

Scientific Work: Research interests on natural products covered a wide variety of compounds such as flavonoids, alkaloids, triterpenoids, lignans, phusalins, etc. The structures of a large number of natural products were established using chemical degradation and spectral data and later confirmed by synthesis. These natural products were isolated from plants having medicinal properties.

Memberships: Fellow: INSA 65; NASI; London Royal Inst. Chem; A P Akademy of Sci.

Ramachandra, Kanakanahalli

Elected: 1975
Position: Hon. Vis. Prof., NIAS, Bangalore
Specialization: Analytic Theory of Numbers
Date and Place of Birth: 18 August 1933; Mandya, Karnataka
Parents: Mallaraiah and Subbalakshamma
Spouse and Children: Saraswathi; one *d*
Address: National Institute of Advanced Studies, Indian Institute of Science Campus,
Bangalore 560 012, India
Tel. (080) 2218 5123 (O), (080) 2332 7507 (R)
email: kram@math.tifrbng.res.in

Education: Bangalore Univ.: BSc Hons 55, MSc 56; Univ. of Bombay: PhD 64.

Career: TIFR, Bombay: 58–96, Prof. 76–96; NIAS, Bangalore Hon. Vis. Prof. 96–.

Scientific Work: Proved two spectacular results on (zeta (1 + *it*))^z, where *z* is a complex constant. Proved some new theorems on the zeros of zeta′ (*s*) *a* and zeta′ (*s*) *a*. Stability theorems have been proved for some generalized Dirichlet series.

Memberships: Fellow: Biographical Acad. of Commonwealth; INSA 74; NASI 90 • Life Member: Indian Mathematical Soc. • President: Hardy–Ramanujan Soc.; Ramanujan Mathematical Soc.

Important Publications: (1) *Lectures on transcendental numbers* (1969) Ramanujan Inst., Madras. (2) *Riemann zeta functions* (1979) Ramanujan Inst., Madras. (3) On the mean value and omega theorems for the Riemann zeta functions (1995) Springer.

Awards & Distinctions: UGC Meghnad Saha Award 76 • UGC National Lecturer 78 • INSA Srinivasa Ramanuja Medal 97 • ISCA Ramanujan Birth Centenary Award 94–95.

Ramachandran, Arcot

Elected: 1974
Specialization: Energy; Heat; Mass Transfer
Date and Place of Birth: 6 April 1923; Madras
Parents: A Lakshmanaswamy Mudaliar and Radha Bai
Spouse and Children: Sushila; two s
Address: No. 3, Crescent Road, High Grounds, Bangalore 560 001, India
Tel. (080) 2225 5780 (R)
email: susilar@hotmail.com

Education: Univ. of Madras: BE 43; Purdue Univ., USA: MS 47, PhD 49.

Career: IISc, Bangalore, Mechanical Engg Dept: Asst. Prof. 50–57, Prof. 57–67, Head of Dept of Industrial Management 65–67; IIT Madras: Dir 67–73; Govt of India, Dept of Sci. & Technol.: Secretary 73–78; CSIR: Dir-General 77–78; Centre for Human Settlement (Habitat), Kenya: Under-Secretary General and Executive Dir 78–93.

Scientific Work: Research work in heat transfer, energy and solar energy. Studied the mechanical and thermal properties and solidification characteristics of castings. Made an in-depth study of thermal power plants in relation to the use of lignite for power generation and other aspects. Applied researches heavily underpinned by fundamental research on thermophysical properties of metals and nonmetals, gases and vapours, including refrigerants. Work with coworkers also covered areas which would later have a multiplier effect on the green revolution in as much as they extended to heat transfer studies for food preservation.

Memberships: Fellow: INSA 74; INAE 87; American Soc. of Mechanical Engineers; Institution of Mechanical Engineers; London • President: Solar Energy Soc. of India.

Awards & Distinctions: Distinguished Alumnus Award 86 • American Soc. of Mechanical Engineers Heat Transfer Memorial Award • Maharajah of Travancore Curzon Res. Prize 45 • Purdue Univ Disting. Alumni Award 72 • Purdue Univ.: DSc (hc), DIng (hc)

Ramachandran, Gopalasamudram Narayana*

Elected: 1950
Specialization: Crystallography; Biophysics; Biomolecular Structure; Theoretical Physics; Mathematical Logic
Date and Place of Birth: 8 October 1922; Ernakulam, Kerala
Parents: G R Narayana Iyer and Lakshmi Ammal
Spouse and Children: Rajalakshmi; two *s*, one *d* (Ramesh Narayan, Harishankar, Vijaya)
Last Address: Gita, 5, 10A Main Road, Malleswaram West, Bangalore 560 055, India
***Deceased:** 7 April 2001

Education: Univ. of Madras: BSc Hons/MA 42; IISc, Bangalore: MSc 44, DSc 47; Cavendish Lab., Univ. of Cambridge, UK: PhD 49.

Career: IISc, Bangalore: Lecturer in Phys. 46–49, Asst Prof. 49–52, Prof. of Molecular Biophys. 71–78, Prof. of Math. Philosophy 78–82, CSIR Distinguished Sci. 82–84, INSA Albert Einstein Prof. in Math. Philosophy Group 84–89; Univ. of Cambridge: 1851 Exhibition Scholar 47–49; Univ. of Madras, Dept of Phys.: Prof. and Head 52–70, Centre of Advanced Study in Biophys. & Crystallography: Dir 62–70; Univ. of Chicago: Part-time Prof. of Biophys. 67–78; Jawaharlal Nehru Fellowship 69–71.

Scientific Work: Pioneered work in the development of the rapidly expanding field of molecular biophysics and mainly on the application of molecular physics and quantum chemistry to the theory of the structure of biopolymers in relation to their biological activity. Sought a simple technique for theoretically assessing the probability of different conformations of these molecules in biosystems. The graphical construction used is now known as the Ramachandran plot. Experience with X-ray crystallography led to an intimate acquaintance with Fourier transforms and their applications to diffraction theory. Applied these methods for giving the theory of image reconstruction from shadowgraphs (such as X-radiograms) using the convolution technique. Turned attention to fundamental theory and mathematical philosophy since 1978 leading to the development of a new Boolean algebraic vector matrix formalism (BVMF) for computer manipulation of logical relations, which can be applied for the computer implementation of any logical argument.

Important Publications: **(1)** *Fourier methods in crystallographs* (1970) Wiley Interscience. **(2)** *Crystallography and crystal perfection* (1963) Academic Press. **(3)** *Aspects of protein structure* (1963) Academic Press. **(4)** *Advanced methods in crystallography* (1964) Academic Press. **(5)** *Conformation of biopolymers* (1967) Academic Press. **(6)** *Biochemistry of collagen* (1976) Plenum Press.

Memberships: Fellow: INSA 63; Royal Soc. of London 77; Royal Soc. of Arts; NASI • Founder Member: TWAS • Chmn: Natl Committee for Crystallography 63–70.

Awards & Distinctions: S S Bhatnagar Award 61 • Watumull Memorial Prize 64 • Meghnad Saha Medal 71 • Srinivasa Ramanujan Medal 72 • Fogarty International Medal, USA 78 • INSA C V Raman Medal 82 • R D Birla Award 85 • CSIR Golden Jubilee Award 91 • M P CSIR Jawaharlal Nehru Award 92 • Roorkee 78, IIT Madras 85, Hyderabad 89, BHU 92: DSc (hc) • IUCr Ewald Prize 99.

Ramachandran, Janakiraman

Elected: 1988
Position: President, Gangagen Biotechnologies Pvt. Ltd, Bangalore
Specialization: Biochemistry; Organic Chemistry; Molecular Biology
Date and Place of Birth: 12 June 1935; Bombay
Children: one child
Address: Gangagen Biotechnologies Private Limited, No. 12, 5th Cross,
Raghavendra Layout, Tumkur Road, Yeshwanthpur, Bangalore 560 022, India
Tel. (080) 2544 8135 (O), (080) 2846 3605 (R), Mobile: 99007 04836
email: jram@gangagen.com

Education: Univ. of Madras: MA 56; De Paul Univ., USA: MS 59; Univ. of California, USA: PhD 62.

Career: Univ. of California, USA, Dept of Biochem.: Teaching Asst 58–59, Hormone Res. Lab.: Graduate Res. Biochemist 59–62, Jr Res. Biochemist 62–63, Postgraduate Res. Biochemist 63–64, Asst Res. Biochemist and Lecturer 64–65, Asst Prof. of Biochemistry 68–72, Assoc. Prof. 72–78, Prof. 78– 84, Adjunct Prof. 84; Weizmann Inst. of Science; Israel: Fellow 65–66; IISc, Bangalore: Sr Res. Fellow in Biochemistry 66–67; Protein Biochem., Genentech, Inc., USA: Acting Dir 84–85, Sr Sci. 85; Astra Res. Centre, Bangalore: Dir 86–98; Astra Biochemicals Pvt. Ltd, Bangalore: Proc. 98–2002; Gangagen Biotechnologies P. Ltd, Bangalore: President 2002–.

Scientific Work: Made pioneering contributions to understanding of hormone receptors at both the protein and gene levels; the mechanisms of signal transduction. Studies on corticotropin, on insulin and acetylcholine receptors are outstanding contributions to hormone biochemistry. Also carried out extensive studies on the structure and function of the adrenocortiotropic hormone. Trail-blazing studies cover the whole breadth of corticotropic hormone action at the organismic, cellular and molecular levels.

Memberships: Fellow: Woodrow Wilson Foundation; Weizmann Memorial; American Soc. of Biological Chemists.

Ramachandran, Lakshinarayanapuram Krishnaiyer*

Elected: 1974
Specialization: Proteins; Antibiotics; Animal and Plant Toxins
Date and Place of Birth: 30 March 1928; Trichur, Kerala
Parents: L A Krishna Iyer and Kalyaniammal
Spouse and Children: Sharada; one *s*, four *d*
Last Address: Department of Biochemistry, Osmania University, Hyderabad 500 007, India
***Deceased:** 11 August 1988

Education: Univ. of Travancore, Kerala: BSc 48; Univ. of Madras: MSc 51, PhD 53.

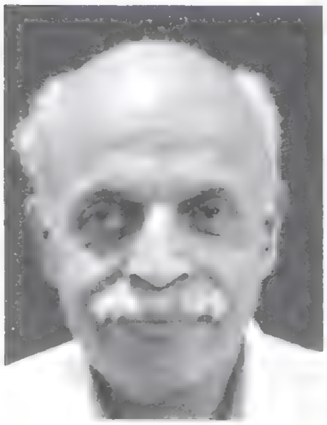
Career: Univ. of Madras, Biochemical Lab: Sr Lab Asst/Jr Sci., Asst 50–53; Praire Regional Laboratory, Canada: Postdoc Fellow 53–55; State Univ. of Iowa, Radiation Res. Lab. and Dept of Biochem.: Res. Assoc. 55–56; Univ of California, USA: Jr Asst Res. Biochemist, Virologist 56–59; Univ. of Madras: Res Fellow 59–60; IISc, Bangalore: Res. Fellow 59–62; Univ. of Hawaii, Honolulu: Vis. Sr Specialist 62–63; NIH, USA, Inst. of Arthritis and Metabolic Diseases: Vis. Sci. 59, 63–64; Osmania Univ., Hyderabad, Dept of Chem.: Reader 64–69, Prof. 70–72, Dept of Biochem.: Prof. 72–88, Head 72–79, 83–88; Technical Univ., Germany, Institut fur Biochimie und Moleculaire Biologie: Guest Prof. 82.

Scientific Work: Original contributions include the structure of proteins, iodine interactions in the thyroid gland, studies on proteins of wheat especially gliadin, new isothiocyanates for sequencing of peptides and proteins, and the protein hormones of the pituitary gland. Actively participated in the elucidation of the structure of tobacco mosaic virus (TMV) protein. Investigations laid the foundation for the oxidative modification of indole groups in proteins with *N*-bromosuccinimide. Elucidated the structure of peptide antibiotic gramicidin A, and identified new amino acids in plants, such as homoarginine, delta-hydroxyhomoarginine and also *N*-oxalyldiaminopropionic acid, a neurotoxin in kesari dal (*Lathyrus sativus*). Carried out extensive investigations on the structure activity correlations in polymyxin, gramicidin and other antibiotics. During later years worked on bovine thyroglobulin, chemical modifications of proteins, toxins of animal venoms, especially the role of magnesium ions in their structure activity relationships, biosynthesis of lathyrine and the complex peptide antibiotic thiostreptan, and the mode of action of cardiotoxins.

Memberships: Fellow: INSA 76.

Awards & Distinctions: Krishnaswamy Iyer Memorial Gold Medal 48 • Sarma Memorial Award 73 • UGC J C Bose Award 78.

Ramachandran, Raghavan



Elected: 1990
Position: Sr Prof. & Co-ordinator, IISER, Pune
Specialization: Particle Physics
Date and Place of Birth: 15 February 1940; Nagercoil, Tamil Nadu
Parents: V R Raghavan and Lakshmi
Spouse and Children: Vijaya; one *s*, one *d* (Siddharth, Ranjani)
Address: Physics & Maths Programme, Indian Institute of Science Education & Research, Central Tower,
Sai Trinity Building, Sutarwadi Road, Pune 411 021, India
Tel. (020) 2590 8039 (O), (020) 2589 0939 (R), Mobile: 94220 04597
email: r.ramachandran@iiserpune.ac.in, rr_1940@yahoo.co.in

Education: Delhi Univ.: BSc Hons 59, MSc 61; Univ. of Chicago: PhD 65.

Career: Univ. of California: Postdoc Res. Sci. 65–67; ICTP, Italy: IAEA Res. Fellow 67; TIFR, Bombay: Vis. Fellow 67–68; IIT Kanpur, Dept of Phys.: Asst Prof. 68–78, Prof. 78–86, Head 86–89; Inst. of Mathematical Sci., Madras: Dir 90–2000, Sr Prof. 2000–02; Harish Chandra Res. Inst.: Sr Prof. 2002–04; South Asia Intl Inst., Hyderabad: Dean Res. 2003–04; Univ. of Pune: Sr Prof. 2004–06; IISER: Pune 2006–.

Scientific Work: Proposed the role of pseudoscalar densities in the decay amplitude which provided the resolution of a current algebra puzzle. Investigated polarization spin dependence which begins in the context of Regge theory in the sixties as due to interference of a Regge amplitude with resonance tails in the background. Next stage Regge theory evolves into Veneziano model, where Regge exchange in the cross channel and resonance in the direct channel get related by duality and this framework was investigated. In the eighties, Veneziano model metamorphosed into string theory. The relationship between spin structures and modular invariance is important in the string context. Observed in the context of spin structure of nucleons in the QCD picture, as early as in 1980, large spin content in the flavour single components of the protons-sea quarks and gluons. Recent research includes spin manifolds, string theories and statistical field theories.

Important Publications: **(1)** Chiral soliton model vs pentaquark structure for theta (2005) **65**, 381–392. **(2)** Landau levels in the noncommutative AdS(2) (2002) *JHEP* **0202,** 017. **(3)** *Solitons, monopoles, instantons: Introduction to topological features in quantum field theory* (1987) (Based on lectures given at 3rd SERC School on Theoretical High Energy Physics, Visvabharti, India). **(4)** Structure of multiloop divergences in the closed bosonic string (1986) *Berkeley High Energy Phys.*, 0362. **(5)** Semiclassical functional methods for arbitrary Hamiltonians (1977) *Phys. Rev.* **D15**, 457.

Memberships: Fellow: NASI 87.

Ramachandran, Sundaresan

Elected: 1974
Specialization: Alloy and Stainless Steel Making; Process Metallurgical Design and Development
Date and Place of Birth: 17 August 1930; Nagpur, Maharashtra
Parents: A R Sundaresan and Gomathy
Spouse and Children: Ganga; two *s*, one *d* (Sunder, Prabhu, Gomathi)
Address: Vidya Theertha Kripa, No. 1, Siva Sundar Avenue, Thiruvanmiyur, Chennai 600 041, India
Tel. (044) 2441 0185 (R)
email: sram@ureach.com

Education: Univ. of Madras: BSc 49; MIT, USA: BS 52, DSc 56; Univ. of Pittsburgh, USA: MBA 69.

Career: Youngstown Sheet & Tube Co., USA: Res. Engg 55–65; Allegheny Ludlum Steel Corporation, USA: Sr Res. Engg 56–72; SAIL, Ranchi: General Manager (R&D) 72–78, Adviser (Technical) 78–81; Foundation to Aid Industrial Recovery, Bangalore, Materials Res. Centre: Dir 81; IISc, Bangalore: Vis. Sci. 83; Process Analysis Centre for Engg Technologies: Principal Consultant 86–90; Uni Metal & Ispat Ltd, Bellary: Technical Adviser 90–93.

Scientific Work: Studied the transfer of sulphur between carbon saturated iron and slag. Demonstrated the electrochemical nature of reaction which is a complex one. This work is cited in all textbooks on kinetics of this reaction. Further work was related to industrial applications. Worked on blast furnace and open hearth process optimization at Youngstown Sheet & Tube, USA.

Awards and Distinctions: Allegheny Ludlum Steel Corpn Lounsbury Award 61, 67, 68.

Ramadas, Trivandrum Ramakrishnan

Elected: 1998
Position: Prof., Joint Head, Assoc. & Federation Agreements, ICTP, Trieste, Italy
Specialization: Geometry; Mathematical Physics
Date of Birth: 30 March 1955
Address: Mathematics Group, Abdus Salam International Centre for Theoretical Physics,
Strada Costiera 11, 34100 Trieste, Italy
Tel. (+39-040) 224 0267 (O), (+39-040) 347 6547 (R)
email: ramadas@ictp.it

Education: IIT Kanpur: MSc 77; Univ. of Bombay: PhD 82.

Career: TIFR: Fellow Reader 82–95, Assoc. Prof. 95–2000, Prof. 2000–02; Math. Inst. Oxford: Visitor 81; Inst. for Advanced Study, Princeton: Vis. Member 87–88; MIT, USA: Vis. Sci. 88–89; Univ. de Montpellier France: Prof. 2002–03; ICTP, Trieste: Prof. 2003–.

Scientific Work: Has made very significant and internationally recognized contributions to algebraic and differential geometry. Early foundational work on gauge theory is the framework for much later work by others. Proved that 'gauge fixing' is sometimes not possible; also that the holonomy group of the 'Coulomb connections' has strikingly different behaviour in the abelian and non-abelian cases. Has also proved an interesting result about the homotopy type of the space of 'classifying' maps inducing a given connection. The 'factorization theorem' for generalized theta functions relates the space of sections of powers of theta line bundles on the moduli space (rank 2) vector bundles on a curve of genus g with those of theta bundles on moduli spaces of (parabolic) bundles on a curve of genus g–1. This provides a rigorous basis for physicists' insights and proves the famous Verlinde formula. Proved that some moduli spaces of vector bundles (in positive characteristic) are Frobenius-split. This yields vanishing theorems and the Verlinde formula. Recently proved that the *K–Z* connection is unitary in the rank 2 case. Most of this work addresses and solves improtant problems.

Ramakrishna, Balakrishnan Siddartha

Elected: 2006
Position: Prof., CMC Hospital, Vellore
Specialization: Gastroenterology; Transport Physiology; Cell Biology; Immunity
Date and Place of Birth: 26 October 1952; Vellore, Tamil Nadu
Parents: T A Balakrishnan and Vatsala
Spouse and Children: Banumathi; two *s* (Rahul, Kartik)
Address: Department of Gastrointestinal Sciences, CMC Hospital, Vellore 632 004, India
Tel. (0416) 228 2052 (O), (0416) 228 4233 (R), Mobile: 99946 14890
email: rama@cmcvellore.ac.in

Education: Madras Univ.: MBBS 75, MD 79, Natl Board of Examinations; MNAMS 81; Madras Univ.: DM 83, PhD 92.

Career: CMC: Jr Lecturer 79–80, Lecturer 80–85, Reader 85–86, Assoc. Prof. 86–90, Prof. 90–; Queen Elizabeth, Australia: Sr Registrar 87–89; Salmaniya Med. Centre: Consultant 98–2000; Yale Univ.: Vis. Prof. 2009–11.

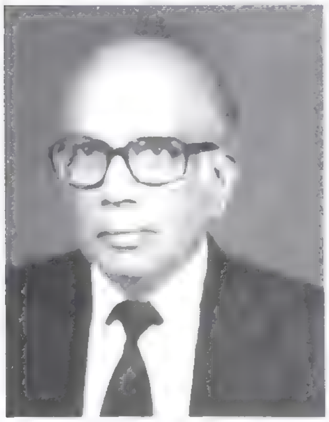
Scientific Work: Research contributions are primarily in the field of diarrhoeal disease. In 1982, described for the first time, a defect in colonic absorption in tropical sprue which contributed to diarrhoea, and identified the causative factors for this defect. Important discovery that short chain fatty acids, small molecules produced in the colon by fermentation of unabsorbed carbohydrates, could ameliorate fluid secretion in the colon brought about by cholera or other toxins led to clinical trials that demonstrated the effectiveness of adding amylase resistant starch to oral rehydration solution in the treatment of patients with cholera. In further clinical studies, demonstrated also that this starch is useful in children with non-cholera diarrhoea. A whole gut perfusion system to evaluate absorption from the entire intestine using various perfusion solutions has been developed in the laboratory. Currently, interest centres around the study of the intestinal commensal microflora using molecular techniques.

Important Publications: **(1)** Bacterial succession in the colon during childhood and adolescence: Molecular studies in a southern Indian village (2008) *Am. J. Clin. Nutr.* (In press). **(2)** Real time polymerase chain reaction quantification of specific butyrate-producing bacteria, *Desulfovibrios* and *Enterococcus faecalis* in the faeces of patients with colorectal cancer (2008) *J. Gastroenterol. Hepatol.* **23**, 1298–1303. **(3)** Molecular studies of fecal anaerobic commensal bacteria in acute diarrhoea in children (2008) *J. Pediatr. Gastroenterol. Nutr.* **46**, 514–519. **(4)** A randomized controlled trial of glucose versus amylase resistant starch hypo-osmolar oral rehydration solution for adult acute dehydrating diarrhoea (2008) *PLoS ONE* **3**, 2, e1587. **(5)** Amylase-resistant starch plus oral rehydration solution for cholera (2000) *N. Engl. J. Med.* **342**, 308–313.

Memberships: Fellow: NAMS 99; INSA 2009.

Awards & Distinctions: CMC Yeddanapalli Gold Medal for Research, • ISG Hoechst Om Prakash Award for Research • NAMS R M Kasliwal Award • ICMR B K Aikat Oration Award • NAMS Achanta Lakshmipathi Oration.

Ramakrishna, Basava Sri



Elected: 1975
Specialization: Acoustics
Date and Place of Birth: 17 October 1921; Vizianagaram, Andhra Pradesh
Parents: Basava Appalaswamy and Lakshmi Narasayamma
Spouse and Children: B S Rajeswari; one *s*, one *d* (Ravi Shanker, Yashod (deceased))
Address: 68, Second Cross, Ganganagar, Bangalore 560 032, India
Tel. (080) 2333 2935 (R)

Education: Andhra Univ.: BSc 41; BHU, Varanasi: MSc 44; Illinois Inst. of Technol., USA: PhD 49.

Career: AVN College, Visakhapatnam: Lecturer in Phys. 44–45; Illinois Inst. of Technol., USA, Armour Res. Foundation: Graduate Res. Asst 48–49; IISc, Bangalore: Lecturer 49–50, Asst Prof. 50–64, Prof. 64–80; Univ. of Minnesota, USA: Vis. Prof. in Acoustics 67–68; Univ. of Hyderabad: Vice Chancellor 80–86.

Scientific Work: Developed the theory of vibrations of the Indian drums, mridanga and thabala and confirmed Raman's earlier observations on the harmonic character of the overtones of these drums analytically and experimentally. Investigated the nonlinear vibrations of stretched strings near their resonance and accounted for the jump and hysteresis phenomena invariably associated with resonant vibrations. A statistical theory of audience sound absorption in concert halls that enables better prediction of the expected absorption from the audience was developed. Designed the acoustics and sound reinforcement for a large number of concert halls, theatres, auditoria and conference halls. Developed information theoretical models of language translation and transcription and investigated the efficiencies of Indian languages for communication relative to English. Investigated prose styles in literature from communication theory point of view and identified some linguistic parameters appropriate to different genre of styles. Developed a simple laboratory setup for obtaining spectrograms of speech suitable for instruction.

Important Publications: **(1)** Vibration of Indian musical drums regarded as composite membranes (1954) *J. Acous. Soc. Amer.* **26**, 523–529. **(2)** Vibration of the Indian drum, Dugga or left-handed thabala (1957) *J. Acous. Soc. Amer.* **29**, 234–238. **(3)** Acoustical design and testing of the Centenary Auditorium of Madras Univ. (1968) *J. Acous. Soc. Am.* **43**, 734–745. **(4)** Acoustics of Northrop Memorial Auditorium (1970) *J. Acous. Soc. Am.* **47**, 951–960. **(5)** *Some aspects of relative efficiencies of Indian languages* (1965) Monograph, IISc, Bangalore.

Memberships: Fellow: Acoustical Soc. of India; Acoustical Soc. of America • Former Member: Intl Commission on Acoustics • President: Acoustical Soc. India

Awards & Distinctions: Bhagavantam Award in Acoustics 84 • Raman Centenary Gold Medal 88.

Ramakrishnan, Alladi*

Elected: 1955
Specialization: Stochastic Processes; Matrix Analysis; Elementary Particles; Relativity
Date and Place of Birth: 9 August 1923; Madras
Parents: Alladi Krishnaswamy Iyer and Venkata Lakshmamma
Spouse and Children: Lalitha; one s (Krishnaswamy)
Last Address: Alladi Centenary Foundation, 62, Luz Church Road, Mylapore, Madras 600 004, India
***Deceased:** 8 June 2008

Education: Madras Univ.: BSc Hons 43; Univ. of Manchester, UK: PhD 51.

Career: TIFR, Mumbai: Res. Fellow 47–49; Univ. of Manchester, UK: Res. Fellow 49–51; Univ. of Madras: Reader 52–59, Prof. of Theoretical Phys. 59–62; The Inst. of Mathematical Sci., Madras: Founder Dir 62–83; Alladi Centenary Foundation, Madras: Chmn 84.

Scientific Work: Main contributions are the development of the method of product densities useful in dealing with continuous parametric systems in stochastic processes, e.g. the vexed problem of fluctuations in the size of cascade showers; extension of the method of regeneration point method to complicated processes; development of the method of basic functions useful in the dimensional theory of fluids; development of a technique for obtaining the distribution function given the moments; formulation of the new method of trajectories to deal with problems involving integration of random functions; formulation of the general mathematical theory of a fluctuating density field; systematic application of the above method to physical problems.

Important Publications: **(1)** *Elementary particles and cosmic rays* (1962) Pergamon Press. **(2)** *L-matrix theory or the grammar of Dirac matrices* (1972) Tata McGraw Hill. **(3)** *Special relativity,* East-West Books, Madras.

Memberships: Fellow: Tamil Nadu Acad. of Sci.

Awards and Distinctions: Pres. Tamilnadu Acad. Sci 83.

Ramakrishnan, Chandrasekharan

Elected: 1990
Specialization: Molecular Biophysics; Protein Structure; Conformation and Analysis through Data Mining
Date and Place of Birth: 30 January 1939; Madurai, Tamil Nadu
Parent: L C Sekharan and L C Subbalakshmi
Spouse: Sakuntala; one *s*, one *d* (Pradeep, Pavithra)
Address: Kausthubam, 212, 7th Cross, 6th Main, Tata Nagar, Bangalore 560 092, India
Tel. (080) 2293 2844 (O), (080) 2351 7566 (R), Mobile: 98457 52493
email: ramkisak@yahoo.co.in

Education: Univ. of Madras: BSc Hons 59, MSc 60, PhD 65.

Career: Univ. of Madras: Lecturer 64–67, Reader 68–72; Univ. of Chicago, USA: Res. Assoc. 67–68; IISc, Bangalore: Asst Prof. 72–79, Assoc. Prof. 79–84, Prof. 84–2001; INSA Sr Sci. 2006–; Univ. of Chicago, USA; Vis. Prof. 19; Univ. of California, San Francisco, USA: Vis. Prof. 89–92; Inst. of Genomics & Integrative Biology, Delhi: Vis. Emeritus Prof. 2001–06; Consultant in the HIV Immunogen Design Project 2004–05.

Scientific Work: Made several original contributions to the conformational analysis of polypeptides. Theoretical studies of cyclic peptide conformations, which constitute the most systematic attempt in the literature in this area, are of value in developing structural models for an ever increasing number of bioactive cyclic peptides. Careful examination of hydrogen bonding in peptides contributed greatly to the interpretation of peptide structures determined in the solid state. Studies on the development of new algorithms for identification of secondary structures in globular proteins provided new insights into the conformational features of segments of the polypeptide chain in proteins. Has developed a software named MODIP for modelling disulfide bonds in proteins which is being used as a significant tool in the site directed mutagenesis studies. In addition has made siginificant inroads into conformational analysis on invariant peptide sequences in bacterial genomes, which has a huge potential in the hot field of drug design.

Important Publications: **(1)** Stereochemistry of polypeptide chain configurations (1963) *J. Mol. Biol.* **7**, 95–99. **(2)** Study of hydrogen bonds in amino acids and peptides (1971) *Intl J. Protein Res.* **3**, 209–231. **(3)** Stereochemical modelling of disulfide bridges. Criteria for introduction into proteins by site directed mutagenesis (1989) *Protein Eng.* **3**, 95–103. **(4)** Glycyl residues in proteins and peptides: An analysis (1990) *Curr. Sci.* **59**, 851–861. **(5)** Conformational analysis of invariant peptide sequences in bacterial genomes (2005) *J. Mol. Biol.* **345**, 937–955.

Memberships: INSA 92.

Awards & Distinctions: Jaya Jayanth Award for Teaching Excellence 95 • Distinguished Fellow of G N Ramachandran Knowledge Centre for Genome Informatics IGIB, Delhi • Gold Medal for Excellence in Biological Sciences & Technology, CSIR 2007.

Ramakrishnan, Krishnaiyer*

Elected: 1970
Specialization: Plant Pathology; Fungal Taxonomy
Date and Place of Birth: 22 November 1920; Calicut, Kerala
Parents: T R Krishna Iyer and K Abhyambal
Spouse and Children: Lakshmi, one *s*, one *d*
Last Address: University of Agricultural Science, Gandhi Krishi Vidya Kendra, Bangalore, India
***Deceased:** 26 March 1978

Education: Madras Univ.: BSc Hons 41, PhD 53.

Career: Univ. Botany Laboratory Madras: Res. Scholar 41–44, Asst Lecturer 45–50, Res. Asst 50–53, Sr Lecturer 53–56; Agr. College and Res. Inst., Coimbatore: Govt Mycologist 56–58, Prof. of Plant Pathology 58–65, Assoc. Dean 65–69, Dean 69–71; Univ. of Agri. Sci., Bangalore: Dean 71–78; ICAR Sci. Panel of Plant Pathology: Chmn.

Scientific Work: Major contributions are in mycology and plant virology. One of the few in India who developed active schools of research in experimental plant virology. While work on the fungi of Madras is the most comprehensive so far for this area, that on plant viruses is significant for the diverse areas which have been addressed.

Ramakrishnan, Moni

Elected: 1994
Specialization: Precambrian Geology; Geochemistry; Petrology; Geochronology
Date and Place of Birth: 27 April 1940; Madurai, Tamil Nadu
Parents: S Moni and M Saraswathi
Spouse and Children: Saroja; two *s*
Address: 29/8, Manipallavam, Balakrishnan Road, Valmiki Nagar, Thiruvanmiyur, Chennai 600 041, India
Tel. (044) 2442 5522, (044) 2442 2068 (R), Mobile: 99401 34126
email: emarkay@hotmail.com, mramkris@gmail.com, moniramki@yahoo.co.in

Education: Univ. of Madras: BSc 60, MSc 62; IISc, Bangalore: PhD 81.

Career: GSI: Jr Geologist 65–69. Sr Geologist 69–81, Dir of Geology 81–86, Dir (Selection Grade) 86–92, Dy Dir General 92–97, Sr Dy Dir General 97–98; Centre for Earth Sci. Studies, Trivandrum: Dir 87–89.

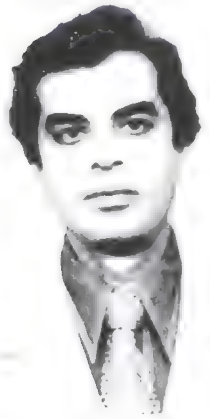
Scientific Work: Discovered the oldest rocks of South India and also found new occurence of rocks and minerals in Karnataka. Proposed a new stratigraphic scheme for the rocks of the Dharwar craton and contributed significantly to the understanding of the evolution of the craton division of archean supra crustal belts into an older Sargur group, and a younger Dharwar supergroup. This has important bearing on the precambrian geol ogy of the craton. Has also proposed a new regional stratigraphic scheme for the Bastar craton of central India, and for the Eastern Ghats mobile belt. Involved in the preparation of several important geological, metamorphic and other thematic maps.

Important Publications: **(1)** *Geology of India* (2008) *Geol. Soc. India*, 2 vols, 994 pp. **(2)** Geodynamics of the Indian shield – through time and space. (2008) *Geol. Soc. India. Mem* **74**, 400. **(3)** Tectonics of southern granulite terrain. *(2003) Geol. Soc. India Mem* **50**, 434. **(4)** Geological evolution of the proterozoic eastern ghats mobile belt (1998) *Geol. Surv. India Spl. Publ.* **44**, 1–21. **(5)** *Stratigraphic evolution of Dharwar craton* (1994) Geokarnataka Volume, 6–35.

Memberships: Fellow: Geological Soc. of India • Member: Indian Geophysical Union; Scientific Board of the International Geological Correlation Programme of UNESCO, France.

Awards & Distinctions: Mysore Geologists Gold Medal 84 • National Mineral Award of Govt of India 89.

Ramakrishnan, Palayanoor Sivaswamy



Elected: 1975
Position: Emeritus Prof. & INSA Hon. Sr Sci., JNU, New Delhi
Specialization: Socio-ecological Systems; Environment and Sustainable Development
Date and Place of Birth: 24 December 1936; Palayanoor, Kerala
Parents: M R Sivaswamy and Lakshmi
Spouse and Children: Sudha; one *s*, one *d* (Puneet, Poonam)
Address: School of Environmental Sciences, Jawaharlal Nehru University, New Delhi 110 067, India
Tel. (011) 2670 4326 (O), (0124) 408 5970 (R), Mobile: 99585 14140
email: psr@mail.jnu.ac.in

Education: Univ. of Madras: BSc 55; BHU, Varanasi: MSc 57, PhD 60.

Career: BHU, Varanasi: Res. Asst/Fellow 57–60; Meerut College, Dept of Botany: Lecturer 60–61; Christ Church College, Kanpur: Lecturer in Botany 61–62; Panjab Univ., Chandigarh: Lecturer in Botany 62–67, Reader in Ecology 67–74; Univ. of Western Ontario, Canada: NRC Fellow 65–67; NEHU, Shillong; School of Life Sci.: Prof. and Head of Botany 74–85, Dean 77–80; Yale Univ., USA: Vis. Fellow 76–77; JNU, New Delhi, School of Environmental Sci.: Prof. of Ecology 85–2002, INSA Hon. Sci. 2002–.

Scientific Work: Starting off as a population ecologist, has correlated the finer patterns of adaptation at sub-specific levels to differential micro-habitat differences. Extended this work to analysing coexistence of closely related species and populations. Has been involved with studies at the ecosystem/landscape level structure and function. Work on ecology and sustainable development of the hill areas of the north-east India, is recognized as a unique effort in linking ecological science with social sciences, a new paradigm in ecological concept.

Important Publications: **(1)** *Shifting agriculture and sustainable development: An interdisciplinary study from north-eastern India* (1992) Man and Biosphere Book Series. 10, UNESCO, Paris and Parthenon Publishing, Carnforth, Lancs, UK, 424 pp. **(2)** *Conserving the sacred: For biodiversity management* (1998) (UNESCO Vol.). Oxford & IBH Publ., New Delhi, 480 pp. **(3)** *Growing populations, changing landscapes: Studies from India, China and the United States* (2001) National Academy Press, Washington DC, USA, 299 pp. **(4)** *Ecology and sustainable development: Working with knowledge systems* (2008) National Book Trust of India, 217 pp. **(5)** *The cultural cradle of biodiversity* (2008) National Book Trust, India, New Delhi, 243 pp.

Memberships: Fellow: NASI 72; INSA 80; TWAS 95; International Soc. of Tropical Ecology; Indian Botanical Soc.

Awards & Distinctions: Pitamber Pant National Environmental Award 85 • Distinguished Scientist Award 86 • India Swami Pranavananda Award in Environmental Sciences 88 • Jawaharlal Birth Centenary Award 94 • IPCC (Inter-governmental Panel on Climate Change) recognition for Knowledge Systems based contributions linked to climate change adaptations, leading to Nobel Peace Prize to IPCC.

Ramakrishnan, Srinivasan

Elected: 2002
Position: Prof., TIFR, Mumbai
Specialization: Low Temperature Physics
Date and Place of Birth: 22 December 1956; Kodumudi, Tamil Nadu
Parents: Sitaraman Srinivasan and Janaki
Spouse and Children: Shyamala; two s
Address: Department of Condensed Matter & Materials Science,
Tata Institute of Fundamental Research, Homi Bhabha Road, Mumbai 400 005, India
Tel. (022) 2278 2257 (022) 2278 2410 (O), (022) 2280 4628 (R), Mobile: 98677 46280
email: ramky@tifr.res.in

Education: Madras Univ.: BSc 77; IIT Madras: MSc 79; Univ. of Bombay: PhD 85.

Career: TIFR: Res. Assoc. 86–90, Fellow 90–93, Reader 93–97, Prof. 97–.

Scientific Work: Has made several outstanding contributions in the study of phenomena of superconductivity, magnetism, heavy fermions and charge density waves. Work involved designing and setting up a versatile state-of-the-art low temperature laboratory with a capability of measuring various physical properties of intermetallic and insulating compounds down to mK temperatures. Internationally acknowledged as an expert in superconductivity and magnetism. Has been a member of the Advisory Committee, Invited Speaker and Session Chairman in annual International Conferences on strongly correlated systems (SCES) for several years.

Memberships: Life Member: IPA.

Awards & Distinctions: N S Satyamurthy Award 90 • Geetha Ledgaonkar Award 90 • Humboldt Award 2001.

Ramakrishnan, Subramaniam

Elected: 2006
Position: Prof., IISc, Bangalore
Specialization: Polymer Synthesis, Polymer Folding & Assembly and Hyperbranched Polymers
Date and Place of Birth: 27 August 1960; Wadakanchery, Kerala
Parents: V V Subramaniam and R Sitalakshmy
Spouse and Children: Lalitha; one s
Address: Department of Inorganic and Physical Chemistry, Indian Institute of Science
Bangalore 560 012, India
Tel. (080) 2293 2744 (O), (080) 2341 8794 (R)
email: raman@ipc.iisc.ernet.in; URL: http://ipc.iisc.ernet.in/~raman/index.htmw

Education: Univ. of Bombay: BSc 80; IIT Bombay, MSc 82; Univ. of Massachusetts, USA: PhD 88.

Career: Corporate Res. Lab, Exxon, NJ: Res. Assoc. 88–90; IISc: Lecturer 90–93, Asst Prof. 93–99, Assoc. Prof. 99–2003, Prof. 2005–.

Scientific Work: Efforts have focussed on the design and development of novel approaches for the control of polymer structure at a molecular level either to elicit a specific property (such as electroluminescence, NLO behaviour, liquid crystallinity, etc.) or to understand the effect of structural fine-tuning on their macroscopic behaviour. The efforts spanned a wide range of polymeric materials, from hyperbranched (dendrimer-type) polymers, to conjugated polymers, discotic liquid crystals, and more recently to molecular imprint polymers and foldamers. Developed methods to control molecular conjugation lengths in conjugated polymers and to understand its implications on their photophysical behaviour in solution and films. Demonstrated that truly flexible synthetic macromolecules can be coerced into adopting a specific folded conformation using a synergistic combination of various intermolecular forces, such as solvophobic, aromatic π–stacking, D-A charge transfer type interactions and metal-ion complexation, thereby paving the way for a generalized approach for conformaional control in synthetic macromolecules.

Awards & Distinctions: Univ. of Massachusetts, Graduate School Fellowship Award 86–87 • IASc Assoc. 91–95 • CRSI Bronze Medal 2002 • MRSI Bronze Medal 2002 •.

Ramakrishnan, T S*

Elected: 1949
Specialization: Mycology; Plant Pathology
Date and Place of Birth: 25 August 1899; Malabar Dist, Madras
Last Address: 31, Lokamanya Street West, R S Puram, Coimbatore 641 002, India
***Deceased:** 2 December 1971

Education: Univ. of Madras: BA Hons 20, MA 22.

Career: Agriculture College and Res. Inst., Coimbatore: Res. Asst 20, Asst Mycologist 27.

Scientific Work: Studied pythiaceous fungi especially the genus *Phytophthora*. This work was continued later and the sexual behaviour of several isolates were described. Was involved in the production of ergot of rye to meet the local demands for the drug and large scale production of ergot has been established on the Nilgiris. Was able to improve its alkaloid content making the Nilgiris ergot one of the best. Also studied black arm disease of cotton and after numerous trials, cultures resistant to this disease have been obtained. In later years attention turned to systematic mycology with special reference to the Uredineae of South India. Has described several new species of rusts and one new genus. Proved that *Solanum melongena* served as the alternate host of *Puccinia penniseti*.

Ramakrishnan, Thekkepat*

Elected: 1974
Specialization: Microbial Metabolism; Microbial Genetics; Molecular Biology
Date and Place of Birth: 14 March 1922; Bangalore
Parents: Karunakaran Nayar and Lakshmikutty
Spouse and Children: Parvathi Devi; two *s*, one *d*
Last Address: Department of Microbiology & Cell Biology, Indian Institute of Science, Bangalore 560 012, India
***Deceased:** 15 February 2008

Education: Univ. of Madras: BA 43, MSc 50; Univ. of British Columbia, Canada: PhD 55.

Career: IISc, Bangalore: INSA Res. Fellow 56–67; Microbiology & Cell Biology Laboratory: Lecturer 57–64, Asst Prof. 64–70, Assoc. Prof. 70–72, Prof. & Chmn 73–82, Dean of Sc. Faculty 82, DST Sr Sci. 82–87, INSA Sr Sci. 87–90; Yale Univ., USA: Res. Assoc. 62–64.

Scientific Work: Elucidated the metabolism and molecular biology of mycobacteria, especially *Mycobacterium tuberculosis*. With coworkers unravelled, the carbohydrate, protein and nucleic acid metabolism of this organism and isolated a transducing mycobacteriophage, I_3 for the first time, which can be used for mapping the genome of the organism. Elucidated the mechanism of action of antitubercular drugs like isoniazid, streptomycin and rifampicin; discovered that a plasmid code for the virulence of the organism, and that RNA polymerase of the organism is a good target for devising new drugs against it. Initiated work on molecular biology and animal tissue culture in IISc, Bangalore.

Memberships: Fellow: US Acad. of Microbiology; INSA 78 • Member: Indian Soc. of Biological Chemists; Intl Cell Res. Org., UNESCO, Paris.

Awards & Distinctions: Watumull Award in Microbiology 66 • FIE Foundation Award in Microbiology 82 • M Damodaran Memorial Lectureship 82 • S R Vyas Memorial Lecture Award 82 • Ranbaxy Res. Award in Medical Sci. 85.

Ramakrishnan, Tiruppattur Venkatachalamurti

Elected: 1980
Position: DAE Homi Bhabha Chair Prof., BHU, Varanasi; NCBS Bangalore
Specialization: Condensed Matter Physics; Statistical Mechanics
Date and Place of Birth: 14 August 1941; Madras
Parents: T R V Murti and Jayalakshmi
Spouse and Children: Meera; one *s*, one *d*
Address: Department of Physics, Banaras Hindu University, Varanasi 221 005, India
Tel. (0542) 230 7327 (O), (0542) 236 7008, (080) 6535 9939 (R), Mobile: 94483 63379
email: tvrama2002@yahoo.co.in, tvrama@bhu.ac.in

Education: BHU, Varanasi: BSc Hons 59, MSc 61; Columbia Univ., USA: PhD 66.

Career: BHU, Varanasi: Lecturer 61–62, Prof. 84–86; DAE Homi Bhabha Chair Prof. 2003–; IIT Kanpur: Lecturer in Physics 66–67, Asst Prof. 67–68, 70–77, Prof. 77–80; Univ. of California, USA, Phys. Dept: Asst Res. Physicist 68–70; Princeton Univ., USA, Phys. Dept: Res. Physicist 78–81, Vis. Prof. 90–91; AT & T Bell Lab., USA: Consultant 79–81; IISc, Bangalore, Phys. Dept: Vis. Prof. 81–84, Prof. 86–98, INSA Srinivasa Ramanujan Res. Prof. 98–2003.

Scientific Work: Developed, with M Yussouff, the modern density functional theory of the liquid to crystalline solid transition. Proposed an approximate form for the free energy as a functional of the density that describes the large local density variations in a strongly correlated classical system in terms of known positional correlation functions of the fluid. Approaches using this functional (now known as the Ramakrishnan–Yussouff or RY functional) have proved useful in a wide variety of problems such as liquid to solid transition, solid–solid interfaces, flux lattice melting, solid–liquid interface, mediation, etc. Work with Abrahams, Anderson and others on electron localization in disordered systems has opened up that field. Discovered backscattering to be the mechanism of weak localization and proposed a scaling theory for disorder-induced metal insulator transition. Also developed the idea of an inverse orbital degeneracy expansion for mixed valent impurities and heavy fermion systems. Contributed to the theory of the mixed phase in high temperature superconductors, boson localization and the superconductor insulator transition.

Memberships: Fellow: INSA 84; NASI 88; TWAS 91; Royal Soc., London 2000; Acadmie des Sciences, Paris; American Physical Soc.

Awards & Distinctions: S S Bhatnagar Award 84 • TWAS Award 90 • Mahendra Lal Sircar Award 93 • Trieste Science Prize 2005 • Gujar Mal Modi Award 2008.

Ramalingaswami, Vulimiri*

Elected: 1974
Specialization: Pathology; Nutritional Disorders; Liver Diseases, Medical Education and Policies; Strategies of Medical Research
Date and Place of Birth: 8 August 1921; Srikakulam, Andhra Pradesh
Parents: Gumpaswami and Sundaramma
Spouse and Children: Prabha; one *s*, one *d*
Last Address: Department of Pathology, All India Institute of Medical Sciences, Ansari Nagar, New Delhi 110 029, India
***Deceased:** 28 May, 2001

Education: Andhra Univ.: MBBS 44, MD 46; Oxford Univ., UK: DPhil 51, DSc 62.

Career: AIIMS, New Delhi: Pathologist 47–54, Dy Dir 54–57, Dir and Prof. of Pathology 57–79, Emeritus Prof. 86–2001; ICMR, New Delhi: Dir General 79–86; Harvard School of Public Health: Vis. Prof. of Inst. Health Policy: 88–90.

Scientific Work: Described the syndrome of protein-energy malnutrition in young, growing children and elucidated its pathology and pathogenesis. Reproduced the human disease in a non-human primate model and studied the pathophysiology of this form of malnutrition, including its effect upon immunological reactivity and cell proliferation kinetics. Identified the aetiology of Himalayan endemic goitre and demonstrated its prevention by the use of iodized salt in Kangra Valley. Described the essential pathology of the liver in Indian childhood cirrhosis and identified a new syndrome of portal hypertension masquerading as cirrhosis of the liver but with better prognosis and discovered its essential pathology. Identified the major aetiological factors of nutritional anaemia in preventing nutritional anaemia in pregnancy.

Important Publications: **(1)** Iodine in human nutrition (1964) *Nutrine – A comprehensive treatise*, Academic Press, pp. 373–416. **(2)** Endemic goitre (1964) *Thyroid gland*, Butterworths, London, pp. 71–87. **(3)** Experimental atherosclerosis in swine: Effect of dietary protein and high fat (1974) *Exp. Molec. Path.* **20**, 115–131. **(4)** Geographic pathology of iron deficiency with special reference to India: I. Histochemical quantitation of iron stores by repeated phleobotany in Indian volunteers (1969) *Am. J. Clin. Nutr.* **21**, 1149–1215.

Memberships: Fellow: INSA 71; NASI 73; Royal Soc. of London 76; Royal College of Physicians of London 69 • Hon. Fellow: American College of Physicians 70 • Member Indian Assn of Pathologists & Bacteriologists; Pathological Soc. of Great Britain and Ireland, Intl Acad. of Pathology, USA; Nutrition Soc. of England; IMA; Indian Assn of Pathologists and Microbiologists; Indian Assn for Advancement of Medical Edn • Chmn: WHO Advisory Committee on Medical Res. • Foreign Assoc., US • Hon. President: INSA.

Awards & Distinctions: Watumull Award 62 • S S Bhatnagar Award 65 • ICMR Basanti Devi Amirchand Prize 66 • Medical Council of India Silver Jubilee Res. Award 74 • Hon. Doctorate in Medicine, Sweden 74, President: INSA 79–80 • INSA J C Bose Medal 77 • Leon Bernard Foundation-WHO Silver Jubilee Res. Award 78 • R D Birla National Award 80.

Ramamurthi, Balasubramanian*

Elected: 1972
Specialization: Neurology; Neurosurgery; Neurophysiology
Date and Place of Birth: 30 January 1922; Sirkali, Tamil Nadu
Parents: T S Balasubramaniam and Balambal
Spouse and Children: Indira; two *s* (Vijayaraghavan, Ravi)
Last Address: 27 Second Main Road, CIT Colony, Mylapore, Madras 600 004, India
***Deceased:** 13 December 2003

Education: Univ. of Madras: MBBS 43, MS 47; Univ. of Edinburgh: FRCS 47.

Career: Govt General Hospital, Madras: Asst to Prof. of Operative Surgery 45–48, Lecturer in Neurosurgery 51–57, Reader 57–59, Neurosurgeon Prof. 59–78; Voluntary Health Service Med. Centre, Adyar: Prof. of Neurosurgery, Head of Dept of Neurosurgery; Hon. Surgeon to the President of India; Madras Med. College: Principal 76–78; Dr A Lakshmipathi Neurological Centre, Madras: Prof. 78–2003.

Scientific Work: Research spans injuries to nervous system, surgery of brain tumours, tuberculous infection of brain, neurophysiology, stereotactic surgery, consciousness and biofeedback techniques. A study of neurophysiology of the deep structures of the brain made during stereotactic surgery led to a better understanding of movement disorders, pain and epilepsy. Investigated the yogic states of meditation and established the value of biofeedback techniques. Also studied the correlation of neurology with ayurveda and yoga. Developed techniques of prevention and treatment of head injuries.

Important Publication: **(1)** *The brain and its problems: A summary of lectures* (1965) Govt of India Press, Nasik. **(2)** Intracranial tumours (1969) *Text book of medicine*, Assn of Physician's, India, pp. 1099–1113. **(3)** Two early neurological signs (1971) *Proc. Inst Neuroi. Madras,* Vol. 1, pp. 1–31. **(4)** Neurosurgery (1974) *A Textbook of surgery*, Asia Pub. House, Bombay, pp. 970–1014. **(5)** Functional neurosurgery (1984) *Psychiatry in India*, Bhalani Books, Bombay.

Memberships: Fellow: Royal College of Surgeons 49; American College of Surgeons 59; INSA 81; NASI 83; Indian Acad. of Medical Surgeons; Intl College of Surgeons 59; Intl Med. Sci. Acad 83; Royal Soc. of Medicine London 83 • Member: IMA; Assn of Surgeons of India; Intl Brain Res. Org.

Awards & Distinctions: Hon. Brigadier Dhanwantari Award • Padma Shri • Padma Bhushan.

Ramamurthy, Vaidhyanathan

Elected: 1986
Position: Prof., Tulane Univ., USA
Specialization: Photochemistry
Date and Place of Birth: 21 August 1946; Srivanjiyam, Tamilnadu
Parents: S Vaidhyanathan and V Jayalakshmi
Spouse and Children: R Rajee; one *s*
Address: Department of Chemistry, Tulane University, New Orleans, LA 70118, USA
Tel. (+1-504) 862 8135 (O), (+1-504) 861 4870 (R)
email: murthy@mailhost.tcs.tulane.edu

Education: Univ. of Madras: BSc 66; IIT Madras: MSc 68; Univ. of Hawaii: PhD 74.

Career: Univ. of Hawaii: Postdoc Assoc. 75; Univ. of Western Ontario, Canada and Columbia, USA: Postdoc Assoc. 75–78; IISc, Bangalore, Dept of Organic Chem.: Asst Prof. 78–83, Assoc. Prof. 83–87; The Du Pont Company, USA, Central Res. and Development Dept: Sci. 87–94; Tulane Univ., USA: Bernard-Baus Prof. of Chemistry 94–.

Scientific Work: Contributed to the understanding of the photochemical and photophysical behaviour of supramolecular assemblies. Selectivity of product distributions in photochemical reactions has been demonstrated within host systems such as cyclodextrins, micelles and zeolites. Significant contributions to the general area of organic solid state photochemistry have been made along with K Venkatesan. Studied of organic molecules on active and inert surfaces with confined geometry.

Memberships: Member: The American Chemical Soc.; Inter-American Photochemical Soc.

Awards & Distinctions: Grammatikakas–Neumann Prize of European Photochemical Soc. 91 • Fulbright Fellow: Eur. Photochem. Soc. Grammatikkas Prize 91.

Ramamurthy, Valangiman Subramanian

Elected: 1991
Position: Director, National Institute of Advanced Studies, Bangalore
Specialization: Nuclear Physics; Applications of Low Energy Accelerators
Date and Place of Birth: 2 April 1942; Tanjore, Tamil Nadu
Parents: V Subramanian and S Sundari
Spouse and Children: Raji; one *s*, one *d*
Address: National Institute of Advanced Studies, IISc Campus, Bangalore 560 012, India
Tel. (080) 2360 1969 (O), (080) 2218 5075 (R), Mobile: 99682 81178, 99000 02178
email: vsramamurthy@nic.in, vsramamurthy@nias.ernet.in

Education: Univ. of Madras: BSc 61, MSc 63, AEET Training School, Bombay: 64; Univ. of Bombay: PhD 71.

Career: Bhabha Atomic Res. Centre, Mumbai: Sci. Offr 64–82, Head, Fission Phys. Sec 82–89; Inst. of Phys., Bhubaneswar: Dir 89–95. Govt of India, Dept of Sci. and Technol., New Delhi: Secretary 95–2006; Inter-Univ Accelerator Centre, New Delhi: DAE Homi Bhabha Chair Prof. 2006–.

Scientific Work: Major contributions, experimental and theoretical, are in the area of nuclear fission and heavy ion reactions. Developed the stochastic theory of fragment mass and charge distributions in low energy nuclear fission of actinides. Demonstrated the rapid washing out of nuclear shell effects on the thermodynamic properties of nuclei. Postulated pre-equilibrium fission arising from the complex entrance channel dynamics in heavy ion fusion reactions. Demonstrated experimentally the occurence of pre-equilibrium fissions by identifying a discontinuity in fission fragment anisotropies across the Businaro–Gallone entrance channel mass asymmetry. All investigations have stood the test of time. Played a major role in the design and fabrication of the photon multiplicity detector for high energy heavy ion reaction studies.

Important Publications: **(1)** *Nuclear radiation detectors.* **(2)** Excitation energy dependence on shell effects on nuclear level densities and fission fragment (1970) *Phys. Rev. Lett.* **25**, 386. **(3)** Shell effects on nuclear level densities (1972) *Phys. Rev.* **C5**, 1124. **(4)** Interpretation of fission fragment angular distributions in heavy ion fusion reactions (1985) *Phys. Rev. Lett.* **54**, 178. **(5)** Entrance channel dependence of fission fragment anisotropies, a direct experimental signature of fission before equilibration (1990) *Phys. Rev. Lett.* **65**, 25.

Memberships: Fellow: INSA 87; NASI 96; INAE 98; TWAS 2001.

Awards & Distinctions: Padma Bhushan 2005.

Raman, Chandrasekhara Venkata*

Elected: 1934 (Founder Fellow)
Specialization: Vibrations and Musical Instruments; Geometrical and Wave Optics; Light and X-ray Scattering; Physics of Crystals, Colour
Date and Place of Birth: 7 November 1888; Trichinopoly, Tamil Nadu
Parents: R Chandrasekara Iyer and Parvati Ammal
Spouse and Children: Lokasundari; two *s* (Chandrasekharan, Radhakrishnan)
Last Address: Raman Research Institute, Bangalore 560 080, India
***Deceased:** 21 November 1970

Education: Univ. of Madras: BA 1904, MA 1907; Hon. Doctorates from 17 universities in India and abroad.

Career: Indian Finance Dept, Calcutta and Rangoon: Gazetted Offr 1907–17; Univ. of Calcutta: Palit Prof. 17–33; IACS, Calcutta: Res. 1907–33 and Hon. Secretary 19–32; IISc, Bangalore: Dir 33–38, Prof. of Phys. 33–48; RRI, Bangalore: Founder-Dir 48–70.

Scientific Work: Best known for the phenomenon of inelastic light scattering named the 'Raman effect' after him. Large body of experimental work was concerned with waves – wave motions of vibrating strings, sound waves, notes of musical instruments, wave optics: diffraction and interference effects. For this and other work, simple but cleverly devised apparatus was designed and fabricated jointly with co-workers. Early examples are the arrangement to obtain photographs of the movement of nodes in a vibrating string and the mechanical violin player used to study the mechanics of bowing of violin strings. Made detailed studies of the dynamics of sound production of Indian stringed and percussion musical instruments. Concern with scattering of light by molecules of substances began in 1919 at IACS, and culminated in the paper published, with K S Krishnan, in *Nature* in 1928 that announced the discovery of `a new type of secondary radiation', later identified to be the result of a particular kind of light scattering that received the name `Raman effect'. For this discovery, was honoured with the Nobel Prize in physics in 1930. Early work in optics at IACS included studies on diffraction fringes, caustics, halos, interference rings, and optical anisotropy and birefringence. While steeped in classical physics, was apparently conscious of other emerging trends. Thus, with K R Ramanathan, proposed one of the first theories of X-ray diffraction in liquids and deduced that the theory of light scattering due to density fluctuations in gases could be applied to X-ray scattering also at small angles of scattering. Spurred some early, if rudimentary, work by the IACS group on X-ray diffraction by many substances, including some of biological interest. Later work in optics at IISc and RRI dealt with iridescence in stratified media, including natural materials such as bird plumage and marine shells, and ancient glass; coronae and halos; more interference rings; optics of heterogeneous media; colour; and studies on minerals and gems, including diamond. Three pieces of work in this period considered important landmarks or forerunners of later, more precise work by others, are the investigations, with N S Nagendra Nath, of the diffraction of light by density fluctuations in a liquid produced by an ultrasonic wave; the discovery, with T M K Nedungadi, of a soft mode in quartz; and with G N Ramachandran, a quantitative description in terms of interference effects of the diffusion corona due to randomly distributed particles (later called the speckle phenomenon). Over thirty years, with a series of collaborators, S K Mitra, S K Banerji, K S Krishnan, Y V Kathavate and others, developed a versatile geometric theory of Fresnel diffraction. In a series of investigations on diamond, attempted to formulate new rules of crystal symmetry for diamond but was later proved wrong. Was involved at this time in a deep controversy with Max Born concerning the dynamics of crystal lattices. While Raman's theory was later shown to be wrong, it nevertheless predicted significant vibrational frequencies of crystal lattices observed in experiments because it gave an important subset of the modes in Born's theory. Guided a large number of research students, many of whom went into scientific eminence and achievement in their own right.

Important Publications: Published about 450 research papers.

Memberships: Fellow: The Royal Soc. of London 24; INSA 35 • Hon. Fellow: Optical Soc. of America; Mineralogical Soc. of America • Foreign Assoc.: Paris Acad. of Sci. • Foreign Member: USSR Acad. of Sci. • Hon. Member: Acad. of the Republic of Romania; Catgut Acoustical Soc. • General President: Indian Sc. Congress 29.

Awards & Distinctions: Curzon Res. Prize 12 • Woodburn Res. Medal 13 • Matteucci Medal 28 • Knighted by the British Govt 29 • Hughes Medal of the Royal Soc. of London 30 • Nobel Prize for Physics 30 • Rajasabhabhushana by the Mysore Maharaja 35 • Franklin Medal of Franklin Institute 41 • National Professor 48 • Bharat Ratna 54 • Lenin Prize, USSR 57.

Raman, Rajiva

Elected: 1996
Position: Prof., BHU, Varanasi
Specialization: Human Molecular Genetics and Cytogenetics; Gene Expression and Chromatin Organization in Development; Sex Determination
Date and Place of Birth: 9 December 1948; Aligarh, Uttar Pradesh
Parents: Brij Bhan Sinha and Shanta
Spouse: Mercy Jacob
Address: Department of Zoology, Banaras Hindu University, Varanasi 221 005, India
Tel. (0542) 236 9905, (0542) 236 8145 (O), (0542) 257 0967 (R), Mobile: 93361 52694
email: raman@bhu.ac.in, rajiva.raman@yahoo.com

Education: BHU: BSc Hons 66, MSc 69, PhD 72.

Career: BHU: Lecturer 76–84, Reader 84–2003, Prof. 2003–.

Scientific Work: Has made scientific contributions in the areas of sex determination in lizards, genetics of cleft lip and palate (newer loci identified) and correlation of the homocysteine pathway genes with Hcy, folates and vitamin B_{12} levels in human population from eastern and central regions of India.

Important Publications: **(1)** Down syndrome In India (2004) *Genetic disorders of the Indian subcontinent*, Kluwer, Netherlands. **(2)** *Mech. Dev.* (2002) **119S**, S55–S64. **(3)** *Intl. J. Androl.* (2005) **28**, 115–119. **(4)** *Int. J. Hum. Genet.* (2006) **51**, 278–283. **(5)** *Gene* (2008).

Memberships: Fellow: INSA 98; NASI 2005; Humboldt Fellowship, Germany 80–81 • President: Indian Soc. of Cell Biology 2004–06.

Awards and Distinctions: Alexander von Humboldt Fellow 80–81, Canada Genetics Congress Bursary Award 88.

Ramanan, Sundararaman

Elected: 1974
Position: Vis. Prof., The Inst. of Mathematical Sci., Chennai
Specialization: Algebraic Geometry; Differential Geometry
Date and Place of Birth: 20 July 1936; Tiruvannamalai, Tamil Nadu
Parents: Sundararama Deekshithar and Marakatham Ammal
Spouse and Children: Anuradha; two *d* (Sumuka, Kavita)
Address: The Institute of Mathematical Sciences, CIT Campus, Taramani, Chennai 600 113, India
Tel. (044) 2254 3376 (O), (044) 2466 0169 (R)
email: ramanan@imsc.res.in

Education: Madras Univ.: BSc Hons 56; Bombay Univ.: PhD 65.

Career: TIFR, Bombay: Res. Scholar 57, Assoc. Prof. 66–69, Prof. 69–84, Sr Prof. 84–92, Distinguished Prof. 92–2002: Japanese Soc. for the Promotion of Sci., Kyoto Univ.: Sr Visitor 76, 94; Hawaii Univ.: Vis. Prof. 77–78; IMSc, Chennai: Vis. Prof. 2003–.

Scientific Work: Obtained basic results in vector bundles on curves. Proved the fundamental theorem on the existence of universal connections along with M S Narasimhan. Theorems on the nonexistence of Poincaré bundles in the so-called non-coprime case; explicit description of the moduli space of rank 2 vector bundles over hyperelliptic curves; results comparing the deformation spaces of a curve and its moduli of vector bundles as a variety and the verification of the Verlinde formula along with Beauville and Narasimhan at the first level are all fundamental in the area of vector bundles. Initiated the study of ample linear systems on abelian varieties. Proved the normality of Schubert and flag varieties with A Ramanathan. Studied the various ways in which spectral curves may be applied and the interplay between vector bundle-theory and other parts of algebraic geometry.

Memberships: Fellow: INSA 77; NASI 92.

Awards & Distinctions: S S Bhatnagar Award 79.

Ramanathan, Annamalai*

Elected: 1991
Specialization: Algebraic Geometry; Algebraic Groups
Date and Place of Birth: 29 August 1946; Madras
Spouse and Children: Vasantha; three *d*
Last Address: School of Mathematics, Tata Institute of Fundamental Research, Homi Bhabha Road, Bombay 400 005, India
***Deceased:** 12 March 1993

Education: Univ. of Madras: MSc 69; Univ. of Bombay: PhD 76.

Career: TIFR, Bombay: Res. Asst 71–74, Res. Fellow 74–76, Fellow 76–84, Reader 84–89, Assoc. Prof. 89–93; Univ. of Bonn, Germany: Vis. Res. Fellow 77–78; Inst. for Advanced Study: Vis. Member 78–79; Johns Hopkins Univ., USA: Vis. Assoc. Prof. 85–87.

Scientific Work: Principal contributions are to geometry of Schubert varieties, and semi-stable vector bundles on projection varieties. With Vikram Mehta, introduced the concept of Frobenius splitting giving rise to a host of new theorems in the study of geometry of Schubert varieties. Also studied the relation between stability and existence of Hermitian–Einstein connections along with V Mehta.

Awards & Distinctions: S S Bhatnagar Award 91.

Ramanathan, Kalpathy Gopalakrishna*

Elected: 1956
Specialization: Solid State Physics; Low Temperature Physics; Inter-relation between Fundamental Physical Constants
Date of Birth: 1 March 1923
Last Address: Department of Physics, Univ. of New Orleans, Lakefront, New Orleans, LA 70148, USA
***Deceased:** 20 August 2003

Education: Andhra Univ., Waltair: BSc Hons 43, MSc 44, DSc 49; Cambridge Univ., UK: PhD 51.

Career: IISc, Bangalore, Phys. Dept: Res. Scholar, Res. Asst, Acting Lecturer 44–49; Royal Soc. Mond Lab., England: 1851 London Exhibition Res. Scholar 49–51, UNESCO Fellow 51–52; Natl Physical Lab., New Delhi: Jr Sci. Offr 52–54, Sr Sci. Offr 54–64, Asst Dir 64–66; Louisiana State Univ., USA: Vis. Prof. 66–67; Univ. of New Orleans, USA, Dept of Phys.: Prof. 67–92, Hon. Prof. 92–2003.

Scientific Work: Worked on the infrared spectrum of diamond and on the dynamical theory of the vibration spectra of crystals. Was closely associated with the setting up of a cryogenic division devoted to fundamental research in NPL.

Memberships: Member: American Physical Soc.; Optical Soc. of America.

Ramanathan, Kalpathy Ramakrishnan*

Elected: 1934
Specialization: Meteorology; Hydrology; Physics of the Upper Atmosphere; Geophysics; Sun–Earth Relationship
Date and Place of Birth: 28 February 1893; Kalpathy, Palghat, Kerala
Parents: Ramakrishna Sastrigal and Subbalakshmi Ammal
Spouse and Children: Parvati Ammal; two s, four d
Last Address: Physical Research Laboratory, Navarangpura, Ahmedabad 380 009, India
***Deceased:** 31 December 1984

Education: Univ. of Madras: BA Hons 14, MA 16.

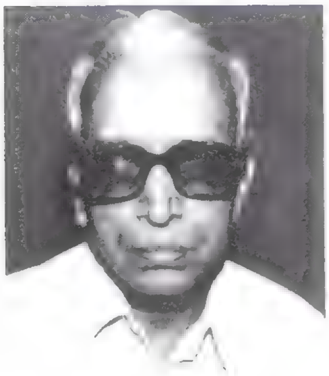
Career: Maharaja's College, Trivandrum: Demonstrator in Phys. 14–21; Meteorological Observatory, Trivandrum 16–21; IACS, Calcutta: Res. Scholar 21–22; Univ. of Rangoon, Burma: Asst Prof. 22–25; India Meteorological Dept 25–48; PRL, Ahmedabad: Prof. of Atmospheric Phys. and Dir 48–66, Prof. Emeritus 66–84.

Scientific Work: Work on light scattering is well known. Examined the molecular diffraction of light by water and alcohols and detected a `feeble fluorescence' in the scattered beam, which eventually led to the discovery of Raman effect. Work in meteorology covered a wide range of subjects like solar and atmospheric radiation, the spectrum of the night sky, meteorological optics and acoustics, terrestrial magnetism, seismology, the Indian monsoon, storms depressions and cyclones in the Indian seas and the general circulation of the atmosphere over India and its neighbourhood. Major contributions in meteorology are the elucidation of the zonal vertical thermal structure of the earth's atmosphere over India and the systematic analysis of the upper winds and the structure of tropical depressions, their movements and evolution. Research work at Ahmedabad mainly concerned studies of atmospheric ozones, night airglow, ionospheric and space physics and solar and galactic influence on the ionosphere. As the world's leading authority on atmospheric ozone main contributions in atmospheric ozone are on the extremely important relationship between atmospheric ozone and the general circulation of the atmosphere, the dependence of ozone distribution on meteorological phenomena and the discovery of the quasi-biennial oscillation of total ozone in the tropics associated with the 26-month oscillation in stratospheric winds and temperatures. In ionospheric and space studies considered, long before anyone else, the ionosphere as another region where circulation systems similar to those in the lower atmosphere were bound to exist. In the studies of the interaction between the neutral and electrical atmospheres, recognition of the thread of unity in the various aspects, which is the principal characteristic of space age atmospheric physics, is possibly the greatest contribution.

Memberships: Hon. Fellow: Royal Meteorological Soc., London • Fellow: INSA 35 • President: Mathematics and Phys. Sec. of Indian Sci. Congress 39; Intl Union of Geodesy and Geophysics 54–57; Intl Ozone Commission 60–67.

Awards & Distinctions: International Meteorological Organization Prize 61 • Padma Bhushan 65 • Padma Vibhushan 76 • Aryabhatta Medal 77.

Ramanathan, Kollagunta Gopalaiyer*



Elected: 1974
Specialization: Number Theory; Automorphic Functions; Ramanujan Manuscripts
Date and Place of Birth: 13 November 1920; Bombay
Parents: K Gopala Iyer and Anantha Lakshmi
Spouse and Children: Jaya Lakshmi; two *s* (Ananth, Mohan)
Last Address: 901, Bhaskara, TIFR Housing Colony, Homi Bhabha Road, Bombay 400 005
***Deceased:** 10 May 1992

Education: Osmania Univ.: BA 40; Univ. of Madras: MA 42; Princeton Univ.: PhD 51.

Career: Annamalai Univ.: Asst Lecturer 45–46; Osmania Univ.: Lecturer 47–48, Inst. of Adv. Study, USA: Lecturer 48–51; TIFR, Bombay: Prof. 51–85, Sr Prof. 70–85.

Scientific Work: First studies dealt with congruence properties of some arithmetical functions. Studied the properties of unit groups of quadratic and hermitian forms over algebraic number fields. Continued a systematic study of the equivalence of a representation by quadratic forms over division algebras with involution and of the unit groups and theta series associated with such quadratic forms as a prelude to an analytic theory for this general set up. Solved the problem of constructing infinitely many classes of mutually incommensurable discrete groups of the first kind in classical semi-simple groups. Then settled the question of maximality of discrete subgroups of arithmetically defined classical groups, generalizing certain results of Hecke and Maass. Also jointly with others did interesting work establishing the 'dense' nature of the set of values at integral algebraic arguments of 'irrational indefinite' quadratic forms representing zero non-trivially. In later years, was actively interested in the study of the published and unpublished manuscripts of Srinivasa Ramanujan.

Important Publications: (1) The theory of units of quadratic and hermitian forms (1951) *Am. J. Math.* 73, 233–255. (2) Quadratic forms over involutional division algebras, Part I (1956) *J. Indian Math. Soc.* 20, 227–257; Part II (1961) *Math. Ann.* 143, 293–332. (3) Zeta functions of quadratic forms (1961) *Acta Arith.* 7, 39–69. (4) Ramanujan's notebooks (1987) *J. Indian Inst. Sci., Spl. Issue,* pp. 25–32. (5) On the algebraic theory of fields (1954) *TIFR Lectures in Math.,* vol. 5.

Memberships: Fellow: INSA 59.

Awards & Distinctions: S S Bhatnagar Award 65 • Padma Bhushan 83 • INSA Homi Bhabha Medal 84.

Ramanathan, Kumbakonam Viswanatha*

Elected: 1975
Specialization: Solid State Electronics
Date and Place of Birth: 17 July 1926; Kumbakonam, Tamil Nadu
Parents: N Viswanatha Sastri and R Neelambal Ammal
Spouse and Children: Radha; one *s*, two *d*
Last Address: Materials Research Centre, Indian Institute of Science, Bangalore 560 012, India
***Deceased:** 8 March 2007

Education: Univ. of Madras: BSc Hons 45, MS 47; Univ. of California, USA: MS 60, PhD.

Career: All India Radio: Engineer 47–58; Univ. of Calif: Res. Asst 58–60; MTS TRW Systems, California 61–62; Hughes Res., USA: Staff Sci. 62–63; TIFR, Bombay, Solid State Electronics Group: Sr Prof., Head 64–83; Semiconductor Complex, Govt of India: Chief Executive 76–80; UCLA, USA: Vis. Prof. 83–84; IBM Res., USA: Vis. Sci. 84–87; RPI, Phys & CIE, USA: Vis. Prof. 88–89; Rennsselaer Polytechnic, USA, Materials Res. Dept & Electrical Engg: Vis. Prof 90; IBM Res., New York and Kodak Res. Labs, USA: Vis. Sci. 91; MRC, IISc, Bangalore: Vis. Prof. 89; Australian Natl Univ., Australia, Electronics & Materials Engg: Vis. Prof. 92–93; Univ. of Florida, USA, Materials Dept: Vis. Prof. 94.

Scientific Work: Involved in the original patent disclosure of TTL, devised dielectric isolation by chemical means, devised a method for depositing SiO_2 on integral silicon oxide to increase the yields. Characterized these circuits which resulted in better mask designs (multiple emitters). Also worked on discrete p-n-p design and fabrication and contributed to the understanding of instability in these transistors due to thermal oxide. Worked on 3d structures with recrystallized polysilicon, instability in thin oxides due to hole injection, reactive ion etching, stabilization of oxides with chlorine, gettering of impurities and denuded zones by oxidation. Worked on low energy reactive ion beam synthesis of oxides and their analysis by XRD, XPS, TED, RBS and laser CVD.

Memberships: Fellow: IEETE, India.

Awards & Distinctions: VASVIK Award 86.

Ramanna, Raja*

Elected: 1966
Specialization: Nuclear Physics; Reactor Physics and Design
Date and Place of Birth: 28 January 1925; Tumkur, Karnataka
Parents: B Ramanna and Rukmani
Spouse and Children: Malathi; one *s*, two *d*
Last Address: National Institute of Advanced Studies, Indian Institute of Science Campus, Bangalore 560 012, India
***Deceased:** 24 September 2004

Education: Univ. of Madras: BSc Hons 45; Univ. of London: PhD 48.

Career: King's College, London: Res. Fellow 45–48; TIFR, Bombay: 49–53; Atomic Energy Establishment, Bombay, Nuclear Phys. Dn: Head 53; BARC: Dir of Phys. Group 62–72, Dir 72–78, 81–83; Ministry of Defence, Govt of India: Sci. Adviser to Defence Minister, Dir-General of DRDO and Secretary, Defence Res. 78–81; Minister of State for Defence 90; Atomic Energy Commission: Member for Res. & Development 72–78, Chmn 83–87; National Inst. for Advanced Studies, Bangalore: Dir 87–97, Dir Emeritus 97–2004; Member, Rajya Sabha 97–2003.

Scientific Work: Significant research achievements are in the field of design and commissioning of research reactors, experimental and theoretical investigations of neutron thermalization and neutron scattering, investigations on fission, including a stochastic theory of the fission process, a geometric theory of atomic and nuclear structure, nuclear exploration for civilian applications, planning accelerator programmes, fast-reactor development and defence oriented research programmes. More specifically, collaborated in the design, installation and commissioning of the research reactors 'Apsara' and 'Cirus' and the variable energy cyclotron (Calcutta) and fast-breeder test reactor (Kalpakkam). Led the group reponsible for the nuclear explosion (Pokharan 1974) aimed at exploiting the atom for socio-economic uses. Grappled with the philosophical foundations of quantum mechanics.

Important Publications: **(1)** *Physics of atomic energy: New frontiers of science* (1965) Bookventure, Madras. **(2)** On the geometric foundations of nuclear shell structure (1969) *Int. J. Theor. Phys.* **2**, 381–403. **(3)** On some new possibilities of the peaceful uses of atomic energy (1974) *Chem. Engg. World Annual*, pp. 37–54. **(4)** On the correlations of masses and lifetimes of radionuclides and fundamental particles (1995) *Mod. Phys. Lett.* **A10**, 741–753.

Memberships: Fellow: INSA 73; Indian Soc. of Engineers • President: Indian Phys. Assn; INSA 77–78, Natl Ctr on Sci. & Technol.; IAEA Sci. Adv. Ctr.

Awards & Distinctions: S S Bhatnagar Award 63 • Padma Shri 68 • Padma Bhushan 73 • Padma Vibhushan 75 • INSA Meghnad Saha Medal 84 • O P Bhasin Award 85 • R D Birla Memorial Award 85–86 • Karnataka Rajyotsava State Award • President: INSA 77–78 • DSc (hc) (Visva Bharati).

Ramanujam, Chidambaram Padmanabhan*

Elected: 1974
Specialization: Algebra
Date and Place of Birth: 9 January 1938; Madras
Last Address: TIFR Centre, Indian Institute of Science Campus, Bangalore 560 012, India
***Deceased:** 27 October 1974

Education: Univ. of Madras: BA Hons 57; Univ. of Bombay: PhD 67.

Career: TIFR, Bombay: Res. Asst 57–60, Res. Fellow 60–63, Assoc. Prof. 64–70, Prof. 74.

Scientific Work: An algebraic geometrist with an outstanding international reputation whose contributions to the study of topology of affine varieties are well known and continue to influence current work in the area. Also made some remarkable contributions to number theory. Elegant solution of the Warring's problem in algebraic number fields brought immediate recognition. Mathematical scholarship was broad and deep and had few equals in this internationally.

Important Publications: (1) Sums of m-TH powers in p adic rings (1963) *Mathematika* 10, 137–146. (2) Cubic forms over algebraic number fields (1963) *Proc. Camb. Photos. Soc.* 59, 687–705. (3) Note on automorphism groups of algebraic varieties (1964) *Math. Ann.* 156, 25–33. (4) On a certain purity theorem (1970) *J. Indian Math. Soc.* 34, 1–10. (5) Remarks on the Kodaira vanishing theorem (1972) *J. Indian Math.* Soc. 36, 41–51.

Ramanujam, Srinivasa*

Elected: 1941
Specialization: Botany; Cytogenetics
Date and Place of Birth: 2 October 1903; Vanavasi, Tamil Nadu
Parents: K Srinivasa Iyengar
Spoluse and Children: Vedam; two *s*, two *d*
Last Address: Agricultural Research Institute, Patna, India
***Deceased:** 9 June 1979

Education: Univ. of London, UK: PhD 37.

Career: Imperial Agri. Res. Inst., New Delhi: Second Economic Botanist 38–46; Central Potato Res. Inst.: Dir 46–51, 52–56; Central Rice Res. Inst., Cuttack: Dir 51–52; Govt of Bihar, Patna, Agri. Res.: Dir 56–66.

Scientific Work: Main contribution to Indian agriculture was in the field of cytogenetics and plant breeding. Identified and studied, for the first time in India, haploids, triploids and tetraploids in rice from the point of view of their usefulness in plant breeding; obtained artificial mutations by irradiation of seeds. A cytological survey of a group of plants to which rice (*Oryza sativa*) belongs sheds light on the origin of the genus *Oryza* and its genetic composition. With others, also produced polyploids of a number of Indian crop plants by the use of colchicine. Furthermore, identified and studied several artificially induced and naturally occurring mutations in a number of crop plants like chilli, gram and mustard.

Memberships: Fellow: INSA • Member: Genetical Soc. of Great Britain; British Assn for the Advancement of Science • President: Botany Sec. of Indian Sci. Congress; Indian Soc. of Genetics and Plant Breeding.

Ramanujam, S G Manavala*

Elected: 1934
Specialization: Entomology
Date of Birth: 26 August 1893
Parents: S Govindaraja Mudaliar
Last Address: Annamalai University, Annamalainagar, Chidambaram, India
***Deceased:** May 1982

Education: Univ. of Madras: MA 15; Univ. of London: PhD 27; Diploma from Imperial College.

Career: Madras Christian College: Lecturer 16–25; Hon. Presidency Magistrate, Madras 20–25; Presidency College, Madras: Prof. of Zoology 27–46; Health Propaganda Board: Secretary 29–48; Principal 46–48; Annamalai Univ.: Vice Chancellor 48–51.

Scientific Work: PhD thesis was on embryological research of the vertebral column of fish. Remained interested in teaching and engaged in research.

Memberships: Fellow: Zoology and Microscopic Soc. of London.

Awards & Distinctions: Rao Bahadur 46 • Lt. Col. 50.

Ramaraj, Ramasamy

Elected: 2000
Position: Prof. in Chemistry, MKU, Madurai
Specialization: Photoelectrocatalysis; Nanomaterials; Chemically Modified Electrodes
Date and Place of Birth: 8 March 1956; Nandavanapatti, Tamil Nadu
Parents: Nagappan Ramasamy and Bommakkal
Spouse and Children: Amutha; one *s*, one *d*
Address: School of Chemistry, Centre for Photoelectrochemistry,
Madurai Kamaraj University, Madurai 625 021, India
Tel. (0452) 245 9084 (O), (0452) 238 2399 (R)
email: ramarajr@yahoo.com

Education: MKU: BSc 78, MSc 80; Univ. of Madras: PhD 87; Japan, MKU: DSc.

Career: MKU: Lecturer 88–96, Reader 96–2004, Prof. 2004–.

Scientific Work: Novel and original concepts developed to design membrane modified electrodes (photoelectrocatalytic molecules/nanomaterials systems) and carrying out interfacial electron transfer processes have led to the development of a new concept of multi-step one-electron transfer process to realize selective multi-electron reduction products such as CO_2, O_2 and NO_3 fixation in membrane systems. Establishment of extra-zeolite electron transfer mechanism at modified electrodes coated with zeolite encapsulated metal complexes was convincingly demonstrated and this throws light on the electron hopping process at zeolite modified electrodes. Establishment of newer photoelectrochemical and electrochemical methods and intermolecular excimer emission of thioflavin T and its 'off-on' control for the study of cyclodextrin inclusion complexes opens up an allied area of research in cyclodextrin photoelectrochemistry. The first report of *in situ* and 3D spectral studies of molecules in restricted microenvironment demonstrated the importance of such techniques for the study of more complicated systems. Catalytically active nanostructured metal particles embedded in different matrices were prepared and novel modified electrodes were designed. Simple and robust electrochemical and optical sensors were constructed for sensitive and selective detection of toxic and biomolecules in nano- and pico-molar concentrations.

Important Publications: **(1)** A facile electrochemical sensor designed from gold nanoparticles embedded in three-dimensional sol-gel network for concurrent detection of toxic chemicals (2007) *Electrochem. Commun.* **9**, 2051–2055. **(2)** Simultaneous determination of ascorbic acid, dopamine and serotonin at poly(phenosafranine) modified electrode (2003) *Electrochem. Commun.* **5**, 667–672. **(3)** Extrazeolite electron transfer at zeolite encapsulated polypyridyl metal complexes coated electrodes (1998) *Langmuir* **14**, 2497–2501. **(4)** Photoreduction of carbon dioxide by metal phthalocyanine adsorbed nafion membrane (1997) *J. Chem. Soc., Chem. Commun.* 343–344. **(5)** Electrochemical and spectroelectrochemical studies of phenothiazine dyes immobilized in nafion film (1996) *Langmuir* **12**, 5689–5695.

Awards & Distinctions: Homi J. Bhabha Award for Research in Applied Sciences 2000 • CRSI Bronze Medal 2000 • IACS Ajit Memorial Lecture Award 93 • Tamil Nadu Scientist Award 98.

Ramasami, Thirumalachari

Elected: 1990
Position: Secretary, DST, New Delhi
Specialization: Physical Inorganic Chemistry; Bio-Inorganic Chemistry; Leather Science and Technology
Date and Place of Birth: 15 April 1948; Srivilliputtur, Tamil Nadu
Parents: T Thirumalachari and Srivaramangai
Address: Department of Science and Technology, Technology Bhavan, New Mehrauli Road,
New Road 110 016, India
Tel. (011) 2651 1439, (011) 2651 0068 (O), (011) 2611 2301 (R), Mobile: 98182 28329
email: dstsec@nic.in

Education: Madras Univ.: BTech 69, MTech 72; Univ. of Leeds, UK: PhD 76.

Career: Chrome Leather Co., Finishing Dept: Technician 69–70; CLRI, Madras, Chem. Dept: Sci. B 76–2006; Ames Lab., USA, Dept of Inorganic Chem.: Ames Lab Fellow 77–80; Dy Dir 88–96, Dir 96–2006; DST, New Delhi: Secy 2006–; Res. Assoc. 80–81, Secy, 2006–; Wayne State Univ., USA: Res. Assoc. 81–83; Univ. of Newcastle-upon-Tyne, UK: Vis. Fellow 83–84.

Scientific Work: Made some important contributions to the understanding of factors controlling reactivities of chromium and related transition metal ions in aqueous systems. Has been involved in the development of experimental probes and methods for quantitative analysis of nuclear and electronic factors influencing substitution and electron transfer reactivities of octahedral complexes. Work includes synthesis of some novel Cr (III) complexes, stabilization of uncommon oxidation states of chromium, quantification of electronic factors in outersphere electron transfer, probing of active site chemistry of some copper and iron proteins and molecular orbital calculations of spectroscopic parameters. Has also led the development of technologies for high absorption tanning salts and methods. Effort has included the designed alteration of manufacturing processes and application methods of chromium based tanning salts to achieve near-zero waste tanning.

Memberships: Member: American Chemical Soc. • Fellow: TWAS 2000; INSA 2005; NASI 2006; Indian Leather Technical Assn.

Awards & Distinctions: Univ. of Madras Leather Club Medal 69 • Coleman Res. Prize 76 • Indian Leather Technologists Assn Special Award of Honour 90 • S S Bhatnagar Award 93 • VASVIK Award • Om Prakash Bhasin Award • Padma Shri 2001.

Ramasesha, Suryanarayanasastry

Elected: 1992
Position: Prof., IISc, Bangalore
Specialization: Many-Body Quantum Chemistry; Organic Solids; Molecular Electronics Molecular Magnetism; Nonlinear Optics
Date and Place of Birth: 16 January 1950; Tumkur, Karnataka
Parents: M Suryanaryana Sastry and Janakamma
Spouse and Children: Sheela; one *d* (Krupa)
Address: Solid State & Structural Chemistry Unit, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2293 2925 (O), (080) 2341 5648 (R), Mobile: 98452 12356
email: ramasesh@sscu.iisc.ernet.in

Education: Bangalore Univ.: BSc Hons 68; IIT, Kanpur: MSc 70, PhD 77.

Career: IISc, Bangalore, Solid State and Structural Chem. Unit: Res. Assoc. 77–79, Asst Prof., 84–90, Assoc. Prof. 90–95, Prof. 95–; Oxford Univ., UK, Inorganic Chem. Lab.: Res. Assoc. 79–81; Louisiana State Univ., USA: Res. Assoc. 81–82; Princeton Univ., USA: Res. Assoc. 82–84.

Scientific Work: Introduced anisotropic next nearest neighbour using (ANNNI) model to describe successfully various experimental observations in polytypes. Developed and applied valence bond theory to spin-conserving systems and examined in particular low-lying states spin conserving systems. Extended second quantized VB theory of atomic and molecular systems. Applied VB techniques for studying model exact nonlinear optical (NLO) properties. Developed numerical techniques to solve inhomogeneous linear equations using a matrix approach. Developed powerful computer techniques to solve inhomogeneous equations and the second most is the application for valence bond formulations to solve model Hamiltonians relevant to systems like push-pull polyenes, one-dimensional kondo lattices, ferromagnetic organic polymers, etc. Current interests are in the application of density matrix renormalization group technique and the quantum Monte Carlo technique to electron correlation problems in low-dimensional systems.

Important Publications: **(1)** Fully symmetrized VB based technique for solving exchange Hamiltonians of molecular magnets (2008) *Phys. Rev.* **B78**, 054408. **(2)** Formation cross-sections of singlet-triplet excitions in π-conjugated polymers (2001) *Nature* **409**, 494. **(3)** Multiconfigurational symmetrized projector quantum Monte Carlo method for low-lying excited states of the Hubbard models (1996) *Phys. Rev.* **B54**, R2276 (Rapid Communication). **(4)** Density matrix renormalization group studies of spin-1/2 Heisenberg system with dimerization and frustration (1995) *Phys. Rev.* **B52**, 6581. **(5)** Exact dynamic nonlinear susceptibilities of finite correlated models (1988) *Chem. Phys. Lett.* **153**, 171.

Memberships: Fellow: INSA 2005.

Awards & Distinctions: INSA Young Scientist Medal 78 • B M Birla Chemistry Award 90 • S S Bhatnagar Award 92 • J C Bose Natl Fellow 2006.

Ramaseshan, Sivaraj*

Elected: 1955
Specialization: X-ray Crystallography; Optics; Condensed Matter Physics; Materials Science
Date and Place of Birth: 10 October 1923; Calcutta
Parents: S Sivaramakrishnan and Sitalaxmi
Spouse and Children: Kausalya; three *d* (Arati, Sita, Tara)
Last Address: Raman Research Institute, C V Raman Avenue, Bangalore 560 080; 7/10, Palace Cross Road, Bangalore 560 020, India
***Deceased:** 29 December 2003

Education: Nagpur Univ.: BSc Hons 43, MSc 44, DSc 49; IISc, Bangalore: AIISc 48.

Career: IISc, Bangalore: Res. Asst 45–49, Lecturer 49–53, Asst Prof. 53–62, Jt Dir 79–81, Dir 81–84; Polytechnic Inst. of Brooklyn, New York: 54–55; IIT Madras, Dept of Phys.: Prof. and Head 62–66; NAL, Bangalore, Materials Sci. Dn: Sci. (Dir Grade) 66–79; RRI, Bangalore: Distinguished Prof. Emeritus 84–2003.

Scientific Work: In crystallography, established the multiwave anomalous X-ray scattering method for the determination of phases of reflection; partial structure factors of binary liquids and glasses; static displacements; and polarization vectors. Proposed the use of anomalous neutron scattering for solving very large structures. Showed that the resistivity anomaly in liquid caesium is due to anomalous electron scattering during the Fermi 6s-5d electron collapse. Formulated and verified laws governing cleavages in crystals. Discovered the icosahedral coordination in ionic solids. Developed new techniques for low temperature crystallography. In optics, Fresnel diffraction in transparent spheres and spheroids; the optical activity of neutrons in halimagnetic structures; the identity of the Pancharatnam spherical excess theorem with the Berry phase; the monograph on crystal optics based on the Poincaré sphere. In condensed matter physics, established the first high pressure laboratory in India; predicted pressure-induced optical activity; predicted and verified the existence of pressure-induced liquid crystallinity; determined the critical point in solid–solid isostructural transformation of SmS. In materials science established the first materials science laboratory in India. Designed and fabricated the first nutation damper for India's satellite Aryabhata; FRP porous tubes for desalination; materials and processes for India's first heart valve prosthesis.

Important Publications: **(1)** Crystal optics: in *Handbuch der physik* (1961) Vol. 25, pp. 1–217. **(2)** *Anomalous scattering* (1976) Munksgaard. **(3)** The photoelastic effect in crystals (1964) *Progr. Crystal Phys.*, Academic Press, pp. 102–138. **(4)** Thermo-optic behaviour in crystals (1964) *Progr. in C rystal Physics,* Academic Press, pp. 139–167. **(5)** The Faraday effect in diamagnetic crystals (1964) *Progr. Crystal Phys.*, Academic Press, pp. 168–183.

Memberships: Fellow: INSA 72; Jawaharlal Nehru Fellow 77–79.

Awards & Distinctions: S S Bhatnagar Award 66 • VASVIK Award 80 • INSA Aryabhatta Medal 85 • Padma Bhushan 85.

Ramasubramanian, Sundareswaran

Elected: 2002
Position: Prof., ISI, Bangalore
Specialization: Stochastic Processes; Reflected Diffusions; Skorokhod problem; Stochastic Models in Insurance
Date and Place of Birth: 3 March 1952; Kalpathi, Palghat, Kerala
Parents: A Sundareswaran and Padma
Spouse and Children: Chandra; two *s*
Address: Statistics & Mathematics Unit, Indian Statistical Institute, R V College Post, Bangalore 560 059
Tel. (080) 2848 3002–4&6/476 (O), (080) 2554 6608 (R)
email: ram@isibang.ac.in, sunramin@gmail.com

Education: Univ. of Madras: BSc 71; IIT Delhi: MSc 73; Indian Statistical Inst.: PhD 82.

Career: NEHU, Shillong: Lecturer 80–83; Indiana Univ., USA: Vis. Asst Prof. 83–84; Univ. of North Carolina, USA: Vis. Asst Prof. 85; Indian Statistical Inst., Bangalore: Lecturer 85–89, Assoc. Prof. 89–93, Prof. 93–.

Scientific Work: Initial investigations concerned asymptotics of diffusions and reflected diffusions. Skorokhod problem (SP) is useful in describing reflected processes. A very general form of SP was formulated, and its optimality properties were studied, along with applications to Leontief models in economics. Also multidimensional insurance models were introduced, and it was shown that SP provided Nash equilibria for some network models. As another application, a class of *n*-person differential games with state-space constraints was studied; this involves a system of Hamilton–Jacobi–Bellman equations with discontinuous Hamiltonians, and the framework of viscosity solutions is needed; though uniqueness may not hold, it was shown that SP can be used to obtain a Nash equilibrium.

Important Publications: **(1)** Transition densities of reflecting diffusions (1996) *Sankhya* **A58**, 347–381. **(2)** Recurrence and transience of diffusions in a half space (1997) *Bernoulli* **3**, 97–119. **(3)** A subsidy-surplus model and the Skorokhod problem in an orthant (2000) *Mathematics of Operations Research* **25**, 509–538. **(4)** An insurance network: Nash equilibrium (2006) *Insurance: Mathematics and Economics* **38**, 374–390. **(5)** A d-person differential game with state space constraints (2007) *Applied Mathematics and Optimization* **56**, 312–342.

Ramaswami, Erode Krishnaswami*

Elected: 1939
Specialization: Mechanical and Electrical Engineering
Date and Place of Birth: 12 February 1894, Shimoga, Karnataka
Parents: E S Krishnaswami Iyer and Saradamba
Spouse and Children: Tara; three s
Last Address: Sharada Cottage, 27/1, 3rd Main Road, Chamarajpet, Bangalore 560 018, India
***Deceased:** 22 April 1979

Education: Univ. of London: BSc, Assoc. City & Guilds Inst.

Career: Government Engg College, Bangalore: 19.

Scientific Work: Research on gas plants, high temperature cast iron, properties of steel castings and properties of Mysore timber.

Important Publications: (1) *Some experiments on kerosene oil gas plant.* (2) *Experiments on high temperature cast iron.* (3) *Physical properties of semi-steel castings.* (4) *Physical properties of Mysore timber.*

Ramaswamy, Chandrasekhara*

Elected: 1939
Specialization: Meteorology; Climatology; Hydrometeorology; Physical Oceanography
Date and Place of Birth: 20 August 1907; Calcutta
Parents: Chandrasekhara Iyer and Parvati Ammal
Spouse and Children: Kamakshi Ammal; four s
Last Address: c/o Prof. R C Sekhar, Institute of Rural Management, P. B. No. 60, Anand 388 001, India
***Deceased:** 17 August 1991

Education: Univ. of Madras: BA Hons 28, MA 30, PhD 68.

Career: India Meterological Dept, Govt of India: Asst Meteorologist 31–42, Meteorologist 42–56, Dir 56–59, Dy Dir General 59–65, Dir General 65–66; Inst. of Meteorology, Sweden 54.

Scientific Work: A very devoted weather forecaster for several years, research was mostly on the various aspects of the Indian monsoon, regional and global. The first Raman spectrum of diamond was obtained using the diamond ring used at the time of the wedding. Last contribution published in 1978 is a monograph on the meteorological aspects of severe floods on India during 1923–79. It dealt with the different synoptic weather situations which caused severe floods, the rainfall amounts associated with each flood, and the effects of these floods on people as could be gathered from official and newspaper reports. Interest in meteorology was so great that after superannuation from the India Meteorological Department as its Director General, registered for a PhD degee, worked hard, and secured the degree in a short time thereafter.

Memberships: Fellow: Royal Meteorological Soc. London; Indian Geophysical Soc.

Awards & Distinctions: C V Raman Centenary Medal 88.

Ramaswamy, Guruvayur Subramanian*

Elected: 1974
Specialization: Structural Engineering
Date and Place of Birth: 3 October 1923; Guruvayur, Kerala
Parents: R Subramania Iyer and Seethalakshmi
Spouse and Children: Seetha; two *s*, one *d* (Suresh, Prem, Usha)
Last Address: Sans Souci, E 119, 16th Cross Road, Besantnagar, Madras 600 090, India
***Deceased:** 9 March 2002

Education: Univ. of Madras: BE 44; California Inst. of Technol., USA: MS 47, CE 48.

Career: PWD, Madras: Jr Engineer 44–48; College of Engg, Kakinada: Asst Prof. 48–49; Annamalai Univ., Civil Engg. Dept: Prof. and Head 49–56; Central Building Res. Inst., Roorkee, Dn of Concrete and Structures: Asst Dir and Head 56–60, Dy Dir 60–65; Structural Engg Res. Centre (CSIR), Madras: Dir, Coordinator 65; United Nations Chief Tech. Adviser to Govt of Trinidad & Tobago, Adviser to Govt of Iraq; Adviser to Dy Minister of Transportation, Saudi Arabia, Univ. of West Indies and Arizona, USA: Vis. Prof.; Octatube Space Structures Indian P. Ltd: Chmn.

Scientific Work: Main contributions are in concrete shell roofs. Most outstanding contribution to concrete shells has been the development of the funicular shell which needs no reinforcement. Made significant contributions to the development of steel tubular space frames and built a number of them in the UAE and India. Research led to the development of new and improved material, new structural forms, simplified methods of structural analysis and appreciable savings in critical materials such as steel and cement often in short supply.

Important Publications: **(1)** *Design and construction of concrete shell roofs* (1968) McGraw Hill, New York. **(2)** Research and development on low cost housing (1977) *Science Appl.* **1**, 231–246. **(3)** Precast funicular shells for mass housing (1977) *Bull. IASS* **18**, 17–21. **(4)** Modern *prestressed concrete design* (1978) Pitman. **(5)** *Steel space frames* (2002) Thomas Telford Pub., London.

Memberships: Fellow: INSA 72; Inst. of Engineers • Member: UGC Standing Committee on Engg Education; Intl Assn for Shell Structures; American Concrete Institute.

Awards & Distinctions: Indian Merchants Chamber Diamond Jubilee Award 71 • Invention Promotion Board Award • Invention Promotion Shield • Inst. of Engineers Gammon Award • Assn of Consulting Civil Engineers Award 93.

Ramaswamy, K L*

Elected: 1944
Last Address: Guru Kripa, 188, Fifth Main Road, 4th Block, Jayanagar, Bangalore 560 011, India
***Deceased**

Education: DSc.

Career: Sindhri Fertilizer Factory, Sindhri: Industrial Adviser to the Govt of Bihar, Patna.

Ramaswamy, Melkote Krishnarao

Elected: 1963
Position: Prof. Consultant, Univ. of Indianapolis
Specialization: Nuclear Physics; Positron Annihilation
Logistics; Computer Systems Quality and Security
Date and Place of Birth: 1931
Address: 518, Cedar Lake Court, Carmel, Indianapolis 460 32, USA
Tel. (+1-317) 816-0116 (R)
email: melramaswamy@sbcglobal.net

Education: MSc; John Hopkins Univ., USA: PhD.

Career: Karnataka Univ., Dharwar: Reader in Nuclear Phys.; Ohio State Univ., USA; American Inst. of Phys.: Vis. Assoc. Prof. and Vis. Sci. 64–65; Fordham Univ., USA: Assoc. Prof. of Phys. 66–72; BITS, Pilani: Dept of Phys.: Prof. 73–78; Value Engg Co., 79–82; Esterline Angus Instrument Corporation, USA 83–84; Regency Electronics, USA 85–86; Indiana Central Univ., USA: Adjunct Prof. 86–90.

Scientific Work: Made important contributions to nuclear physics especially the study of nuclear energy levels by beta-ray and gamma-ray spectroscopy and the elucidation of nuclear structure effects by the study of internal conversions and electric monopole transitions. Explored possibility of neutrino detection using Indium-113m. Initiated phase transition studies using positron annihilation technique.

Ramaswamy, Melkote Narasimhaiah*

Elected: 1936
Specialization: Organic Chemistry; Forestry; Medicinal Plants; Wood Technology
Date and Place of Birth: 26 November 1905; Mysore, Karnataka
Parents: S Narasimhaiah and Venkatasubamma
Spouse and Children: Visalakshi; two *s*, two *d*
Last Address: Central Indian Medicinal Plants Organization, 324, Second Block, Jayanagar, Bangalore 560 011, India
***Deceased:** 27 January 1966

Education: Univ. of Mysore: BSc 26; Univ. of Dacca: MSc 29; Univ. of Munich: DSc 35.

Career: Mysore Forest Service: Probationer 31, Deputation to Germany 32–35, Sub-Asst Conservator 35–37; Founder of Forest Res. Lab., Bangalore 38, Asst Conservator of Forests & Forest Chemist 38–47, Forest Rangers School, Lecturer 40, Tech. Asst to Chief Conservator of Forests 47–49, Forest Res. Lab. Chief Res. Offr 51–60, Conservator of Forests and Chief Res. Offr 57–60; Essential Oil Res. Council of CSIR 58–60, Founder and Zonal Dir of Central Inst. of Medicinal & Aromatic Plants of CSIR 60–66.

Scientific Work: Worked in organic chemistry, forestry, minor forest products, soil chemistry, essential oils, aromatic and medicinal plants, wood technology, remedies for spike diseases in sandal plants, bamboo and rayon.

Memberships: Colombo Plan Fellow in Australia.

Ramaswamy, Mythily

Elected: 2007
Position: Prof., TIFR Centre for Applicable Mathematics, Bangalore
Specialization: Nonlinear Functional Analysis; Partial Differential Equations; Applications to Control Problems
Date and Place of Birth: 6 June 1954; Pune, Maharashtra
Parents: S Ramaswamy and Seetha
Spouse and Children: Anil Kumar; one *d* (Vasudha)
Address: TIFR Centre for Applicable Mathematics, Sharada Nagar, Yelahanka New Town, Bangalore 560 065, India
Tel. (080) 6695 3726, 6695 3790 (O), (080) 2334 1138 (R), Mobile: 98453 35387
email: mythily@math.tifrbng.res.in; URL: math.tifrbng.res.in/~mythily

Education: Univ. of Bombay: BSc 74, MSc 76; Univ. of Pierre et Marie Curie, Paris, Diploma de Docteur-6, 83; Docteur de l Universite 90.

Career: TIFR: Res. Assoc. 85–89, Fellow 89–95, Reader 95–98, Assoc. Prof. 98–2005, Prof. 2005–.

Scientific Work: Research interest is in analysis of solutions of partial differential equations regarding their existence, uniqueness and qualitative properties, in particular symmetry properties. Main tools are nonlinear functional analysis, topological and variational methods and bifurcation theory. For the quasilinear operator p-Laplacian, which is not uniformly elliptic, along with collaborators, F Pacella and L Damascelli, proved that the ground state (least energy) solutions of p-Laplacian equations ($1 < P$).

Important Publications: **(1)** Symmetry of solutions of elliptic equations via maximum principles (2008) *Handbook of differential equations, stationary partial differential equations,* 6, Elsevier Science B V North Holland. **(2)** Positive solution branch for elliptic problems with critical indefinite nonlinearity (2005) *Diff. Integ Eqns* **18**, 7, 721–764. **(3)** Hybrid control and viscosity solutions (2005) *SIAM J. Control and Opt.*, **44**, 4, 1259–1288. **(4)** Symmetry of ground states of *p*-Laplace equations via the moving plane method (1999) *Arch. Ratl. Mech. Anal.* **148**, 291–308. **(5)** Symmetry of C_1 solutions of *p*-Laplace equations in R_N (2001) *Advances in Nonlinear Studies* **1**, 1, 40–64.

Memberships: Fellow: NASI 2007.

Awards & Distinctions: Kalpana Chawla Award • Karnataka State Govt 2004.

Ramaswamy, Ramakrishna

Elected: 1993
Position: Prof., JNU, New Delhi
Specialization: Nonlinear Science; Systems Biology and Bioinformatics; Chemical Dynamics
Date and Place of Birth: 14 October 1953; Madras
Parents: N Ramaswami and Malathi
Spouse and Children: Charusita Chakravarty; one *s*, one *d* (Rohan, Krithi)
Address: School of Physical Sciences, Jawaharlal Nehru University, New Delhi 110 067, India
Tel. (011) 2616 1908 (O), (011) 2674 1109 (R), Mobile: 98719 85820
email: r.ramaswamy@mail.jnu.ac.in, r.ramaswamy@gmail.com

Education: Madras Univ.: BSc 72; IIT Kanpur: MSc 74; Princeton Univ., USA: PhD 78.

Career: Caltech, USA: Postdoc Fellow 78–80; TIFR, Bombay: Vis. Fellow 81–83, Fellow 83–86; JNU, New Delhi: Assoc. Prof. 86–89, Prof. 90–; International Center for Theoretical Physics, Trieste: Assoc. 88–93, Sr Assoc. 96–2001.

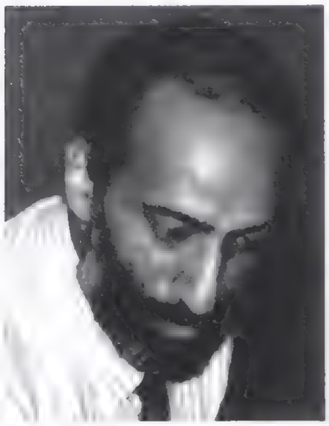
Scientific Work: Has made fundamental contributions in the study of nonlinear dynamical systems, particularly on the control and synchronization of chaotic and stochastic systems, and the study of strange nonchaotic dynamics. Interests also extend to genomics, the study of DNA sequences, and biological physics, in particular to stochastic processes at the cellular and subcellular level.

Important Publications: **(1)** Quantum number and energy scaling for non-reactive collisions (1979) *J. Chem. Phys.* **71**, 850–865. **(2)** The onset of chaotic motions in deterministic systems (1981) *J. Chem. Phys.* **74**, 1385–1393. **(3)** Adaptive control in nonlinear dynamics (1990) *Physica* **D43**, 118–128. **(4)** Prediction of probable genes by Fourier analysis of genomic sequences (1997) *Computer Applications in Biosciences* **13**, 263–270. **(5)** Effective mechanisms for the synchronization of stochastic oscillators (2007) *Phys. Rev.* **76**, 041136–1–10.

Memberships: Fellow: INSA: 2008; TWAS 2008.

Awards & Distinctions: IASc Assoc. 85–88 • INSA Young Scientist Medal 85 • Santa Fe Institute International Fellow 2000–01.

Ramaswamy, Sriram Rajagopal



Elected: 1996
Position: Prof., IISc, Bangalore
Specialization: Condensed Matter Physics; Non-Equilibrium Statistical Physics; Biological Physics
Date and Place of Birth: 10 November 1957; Lucknow, Uttar Pradesh
Parents: Ramaswamy R Iyer and Suhasini
Spouse and Children: Rama Govindarajan; two *s* (Achintya Prahlad, Vidur Niranjan)
Address: Department of Physics, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2360 2698, (080) 2293 3283 (O), (080) 2360 0522 (R)
email: sriram@physics.iisc.ernet.in; URL: http://physics.iisc.ernet.in/~sriram

Education: Maryland Univ.: BS 77; Chicago Univ.: PhD 83.

Career: Univ. of Penn.: Res. Investigator 83–86; IISc: UGC Res. Sci. A 86–90, Asst Prof. 90–96, Assoc. Prof. 96–2002, Prof. 2002–.

Scientific Work: Theory of the hydrodynamics and fluctuations of collections of self-propelled or `active' particles, including cytoskeletal extracts, collectively swimming bacteria and schools of fish; experiments on the nematic phase of a vibrated-rod monolayer, confirming predictions of active-matter theories; theoretical demonstration of rheological chaos in nematic hydrodynamics; theory of velocity fluctuations in sedimentation; prediction of anomalous scaling of heat-conductivity in one-dimensional momentum-conserving systems.

Important Publications: **(1)** Active elastic dimers: self-propulsion and current reversal on a featureless track (2008) *Phys. Rev. E* (Rapid Comm.) **77**, 020102. **(2)** Long-lived giant number fluctuations in a swarming granular nematic (2007) *Science* **317**, 105. **(3)** Do current-density nonlinearities cut off the glass transition? (2006) *Phys. Rev. Lett.* **96**, 135701. **(4)** Spatiotemporal rheochaos in nematic hydrodynamics (2004) *Phys. Rev. Lett.* **92**, 055501. (5) Hydrodynamic fluctuations and instablilities in ordered suspensions of self-propelled particles (2002) *Phys. Rev. Lett.* **89**, 058101.

Memberships: Fellow: INSA 2004 • Member: Indian Physics Assn.; American Physical Soc., Advisory Board: Soft Matter; Editorial Board: Adv. Phys.; J. Stat. Mech. Theor. Expt.

Awards & Distinctions: N S Satyamurthy Award 88 • IASc Assoc. 88–92 • B M Birla Memorial Prize for Physics 96 • NASI Young Scientist Millenium Award 2000 • G D Birla Prize 2006 • J C Bose Fellowship 2007.

Ramaswami, V*

Elected: 1944
Specialization: Mathematics
Last Address: Department of Mathematics, Andhra University, Waltair, India
***Deceased**

Education: Univ. of Cambridge: BA, PhD.

Career: Andhra Univ., Waltair, Dept of Mathematics: Prof.

Ramdas, Anant Krishna

Elected: 1969
Position: Lark-Horovitz Distinguished Prof., Purdue Univ., USA
Specialization: Condensed Matter Physics; Semiconductor Physics; Optical Phenomena Solid State Spectroscopy
Date and Place of Birth: 19 May 1930; Poona
Parents: L A Ramdas and Kalyani
Spouse: Vasanthalakshmi
Address: Department of Physics, Purdue University, West lafeyette, Indiana 47907, USA
Tel. (+1-765) 494 3028 (O), (+1-765) 463 2707 (R)
email: akr@purdue.edu

Education: Poona Univ.: BSc 50, MSc 53, PhD 56.

Career: RRI, Bangalore: Jr Res. Scholar 50–54, Sr Res. Scholar 54–56; Purdue Univ., USA: Res. Assoc. 56–60, Asst Prof. 60–62, Assoc. Prof. 62–67, Prof. 67–2002, Lark-Horovitz Distinguished Prof. of Physics 2002–.

Scientific Work: Optical phenomena exhibited by condensed matter, employing a wide variety of spectroscopic techniques, i.e. Raman and Brillouin scattering, absorption, reflection and emission of radiation, and modulation spectroscopy, led to novel insights into localized and collective vibrational, electronic, and magnetic excitations in bulk and sub-micron heterostructures of semiconductors and insulators.

Important Publications: **(1)** Raman spectrum of diamond (1970) *Phys. Rev.* **B1**, 1687. **(2)** Brillouin scattering in diamond (1975) *Phys. Rev.* **B11**, 3139. **(3)** Spectroscopy of solid state analogues of hydrogen atom: Donors and acceptors in semiconductors (1981) *Rep. Prog. Phys.* **44**, 1297–1387. **(4)** Raman scattering in diluted magnetic semiconductors (1991) *Light scattering in solids* VI, 137–206. **(5)** *Piezospectroscopy of semiconductors in the spectroscopy of bulk and artificially structured semiconductors*, ed. D G Seiler and C L Litter, Vol. 36 of *Semiconductor and Semimetals* (1992) Academic Press, New York, pp. 137–220.

Memberships: Fellow: TWAS 95; Am. Phys. Soc. 69; Opt. Soc. Am. 96; Am. Vacuum Soc. 2002.

Awards & Distinctions: Alexander von Humboldt Foundation Sr US Scientist Award 77–78 • Raman Centenary Medal 88 • Special Recognition by the American Chapter of the Indian Phys. Assn 89 • Frank Isakson Prize of American Physical Soc. 94 • Herbert Newby McCoy Award, Purdue Univ. 94 • IASc Raman Prof. 94–95 • Sigma Xi Faculty Research Award 2001.

Ramdas, Lakshminarayanapuram Ananthakrishnaiyer*

Elected: 1934
Specialization: Climatology; Geophysics
Date and Place of Birth: 3 June 1900; Palghat, Kerala
Parents: L K Ananthakrishna Iyer and Gangai Ammal
Spouse and Children: Kalyani; two *s*, three *d*
Last Address: Endeavour, C-14, Inderpuri, New Delhi 110 012, India
***Deceased:** 1 January 1979

Education: Presidency College, Madras: BA 20; Univ. College of Sci., Calcutta: MA 23; Calcutta Univ.: PhD 27.

Career: IACS, Calcutta: Palit Res. Scholar 23–26; India Meteorological Dept: Asst Meteorologist, Karachi 26–30, Poona 30–32; Meteorologist-in-Charge of Agri. Meteorology, Poona 32–53, Dy Dir General of Observatories (Climatology and Geophysics), Poona 53–56; NPL, New Delhi, Power Dn: Asst Dir and Head 56–61; CSIR: Emeritus Sci. 65–70.

Scientific Work: At Calcutta, carried out fundamental studies on light scattering under the guidance of C V Raman. The highlights of this research were discovery of scattering of light by pure liquid surfaces first demonstrated in the case of pure surface of liquid mercury, followed by its general occurrence in all liquid surfaces. After joining the India Meteorological Department, recorded the first Raman spectrum in the gaseous state in Raman's laboratory in 1928. At IMD, while stationed in Karachi, was closely associated with the pioneering activities in aviation meteorology. Explored micro-meteorology of Poona and its environs; discovered the occurrence of the coldest air layer during the clear season at some distance above the ground (called as the Raman layer by R Narasimha); established the Division of Agricultural Meteorology and carried out pioneering and comprehensive research on a range of issues significant in the context of weather in relation to agriculture. Organized and directed the activities in the service of the farmer based on statistical analysis of crop weather data, experimental investigations on water logging of soils, soil temperatures and radiation balance, microclimates of plant communities, evaporation of water vapour, etc. At NPL, continued research in radiation, evaporation control and related problems.

Memberships: Fellow: INSA 35; NASI 48; Royal Meteorol. Soc. 36; Indian Meteorological Soc. 48; World Acad. of Art and Sci. 63 • President: Phys. Sec. of Indian Sci. Congress.

Awards & Distinctions: MBE, British Government 46 • Padma Shri 58.

Ramdorai, Sujatha

Elected: 2004
Position: Prof., TIFR, Mumbai
Specialization: Algebra; Quadratic Forms; Number Theory; Iwasawa Theory
Date and Place of Birth: 23 May 1962, Bangalore, Karnataka
Parents: P Rangarajan and Srimathi
Spouse and Children: S Ramadorai; one *d*
Address: School of Mathematics, Tata Institute of Fundamental Research, Homi Bhabha Road,
Mumbai 400 005, India
Tel. (022) 2278 2283 (O), (022) 2280 4758 (R), Mobile: 99200 18274
email: sujatha@math.tifr.res.in; URL: http://www.math.tifr.res.in/~sujatha

Education: Bangalore Univ.: BSc 82; Annamalai Univ.: MSc 85; TIFR: PhD 92.

Career: TIFR: Res. Scholar 85–90; Res. Assoc. 90–93; Fellow 93–97, Reader 97–2000; Asst Prof. 2000–06, Prof. 2006–, Member, Natl Knowledge Commission 2007–09.

Scientific Work: Initial research in the algebraic theory of quadratic forms and local global principles. Formulated the main conjecture in non-commutative Iwasawa theory along with Coates, Fukaya, Kato and Venjakob. Study of birational motives and the theory of motives from a categorical point of view.

Important Publications: **(1)** *Cyclotomic fields and zeta values* (2006) Springer Monograph. **(2)** On the Euler-Poincaré characteristics of finite dimensional p-adic Galois representations. (2001) *Publ. Math. Inst. Hautes Études Sci.* **93**, 107–143. **(3)** A few localisation theorems (2007) *Homology, Homotopy Appl.* **9**, 2, 137–161. **(4)** The GL2 main conjecture for elliptic curves without complex multiplication (2005) *Publ. Math. Inst. Hautes Études Sci.* **101**, 163–208. **(5)** Iwasawa theory and modular forms (2006) *Pure Appl. Math.* **2**, 2, 2, 519–538.

Memberships: Fellow: NASI 2005; Alexander von Humboldt Fellow 97–98.

Awards & Distinctions: INSA Young Scientist Medal 93 • IASc Assoc. 94–97 • S S Bhatnagar Award 2004 • ICTP Ramanujan Medal 2006.

Ramesh, Rengaswamy

Elected: 2001
Position: Sr Prof. Sci., PRL, Ahmedabad
Specialization: Palaeoclimatology and Climate Modelling; Mass Spectrometry; Oceanography
Date and Place of Birth: 2 June 1956; Alwarthirunagari, Tamil Nadu
Parents: Muthappa Iyengar Rengaswamy and Sakunthala
Address: Physical Research Laboratory, Navrangpura, Ahmedabad 380 009, India
Tel. (079) 2631 4265 (O), (079) 2676 3980 (R), Mobile: 94270 12045
email: rramesh@prl.res.in; URL: http://www.prl.ernet.in/~stail/ramesh.html

Education: Madras Univ.: BSc 76, MSc 78; Gujarat Univ.: PhD 85.

Career: PRL: Res. Scholar 78–84, Postdoc Fellow 85–86, Res. Assoc. 87, Sci. 87–94, Reader 94–98, Assoc. Prof. 99–2001, Prof. 2002–07, Sr Prof. 2008–; Scripps Inst. of Oceanography, USA: Vis Res. Assoc. 92, 93.

Scientific Work: One of the pioneering stable isotope geochemists in India. Through novel ideas, innovative experiments and modelling efforts, has contributed significantly to characterize and quantify global change processes, paleoclimates in particular, on various spatial and temporal scales. Demonstrated that the stable isotope (^{13}C/^{12}C, D/H and ^{18}O/^{16}O) variations tree rings and corals (^{18}O/^{16}O) were indeed related to climatic parameters such as rainfall and (air and sea surface, respectively) temperature and that the stable isotope ratios of hydrogen in tropical teak trees can be used to reconstruct past monsoon rainfall. In study of corals, used an innovative technique of decoupling salinity and SST records by using stable isotope ratios of a giant clam growing on the coral reef, so that an SST–oxygen isotope equation can be derived. Further demonstrated that peat samples from southern India indeed preserve in them a record of paleomonsoon changes and these are concordant with the oceanic evidence obtained earlier by him from the oxygen isotope systematics of sediment cores from the Arabian Sea. Has developed a unique skill of combining mathematical modelling and experimental measurements and expertise in mathematics has enabled to address some important earth science questions. Reconstructed paleomonsoon quantitatively for the past 10000 years using oxygen isotopes in cave deposits from Madhya Pradesh and Orissa. Has shown that the sensitivity of the atmospheric general circulation models can be significantly affected by physical parameterizations and the model horizontal resolution, when these are used to simulate palaeoclimate/paleomonsoon. More recently has obtained new results on the high resolution paleoclimate of the Arabian Sea. Involved in quantifying carbon sequestration by oceans using isotopes of nitrogen.

Important Publications: **(1)** Dendroclimatological implications of isotope coherence in trees from Kashmir Valley, India (1985) *Nature* **317**, 802–804. **(2)** Climatic significance of dD variations in a tropical tree species from India (1989) *Nature* **337**, 149–150. **(3)** δ^{18}O evidence for increased north east monsoon current during the last glaciation (1990) *Nature* **343**, 549–551. **(4)** A δ^{13}C record of the late quaternary climate change from tropical peat in southern India (1993) *Nature* **364**, 703–706. **(5)** High resolution holocene environmental changes in the Thar Desert, NW India (1999) *Science* **284**, 125–128.

Memberships: Fellow: INSA 2001; NASI 2002; TWAS; Indian Meteorological Soc.; Indian Soc. for Mass Spectrometry; Gondwana Geological Soc.

Awards & Distinctions: P E Subramania Iyer Medal 78 • K S Krishnan Gold Medal 78 • INSA Young Scientist Medal 87 • S S Bhatnagar Award 98 • TWAS Prize 2006.

Ramiah, Krishnaswamy*

Elected: 1934
Specialization: Genetics and Plant Breeding in Relation to Rice, Cotton and Wheat
Date and Place of Birth: 15 April 1882; Kizhakarai, Ramnad Dist, Tamil Nadu
Parents: Krishnaswamy Iyer and Kuppammal
Spouse and Children: Janaki Ammal; five *s*, two *d*
Last Address: Swathi, 19th Cross Road, Malleswaram, Bangalore 560 055, India
***Deceased:** 2 August 1988

Education: Univ. of Madras: Diploma in Agri. 14; Univ. of Cambridge, UK: Post Graduate Diploma in Genetics 28, MSc 28; Utkal Univ., Bhubaneswar: DSc 87.

Career: Palur Res. Station, Palur, Tamil Nadu: Asst Farm Manager 14; Agri. College, Coimbatore: Res. Asst 14–21, Asst Paddy Specialist 21–26, Paddy Specialist 28–37; Inst of Plant Industry, Indore: Geneticist and Botanist 37–46; Central Rice Res. Inst, Cuttack: Founder Dir 46–51; FAO Regional Office, Thailand: Expert on rice production and breeding in south-east Asia 51–57; Univ. of Agriculture and Technology, Bhubaneswar: Vice Chancellor 65–68.

Scientific Work: Applied the tools of genetics and biometrics to the improvement of rice, wheat and cotton. Through direct selection and hybridization, developed many popular rice varieties such as ADT 3, CO 4 and GEB 24. GEB 24 has been extensively used in national and international breeding programmes and is a progenitor of over 83 improved rice varieties developed in India, Philippines and other countries. FAO launched an international *indica-japonica* hybridization programme in 1952, based on his suggestion, which led to the development of varieties such as ADT 27 in Tamilnadu and Mahinja and Mahsuri in Malaysia. Success of this *indica-japonica*-programme eventually led to the concept of establishing the International Rice Research Institute in Philippines in 1960 for facilitating international collaboration for rice improvement at global level. Vision and forethought led to the establishment of systematic germplasm collection for rice at Cuttack, first of its kind for any agricultural crop.

Memberships: Fellow: INSA 42.

Awards & Distinctions: Padma Shri 56 • Padma Bhushan 70 • Sunderlal Hora Medal of INSA 69.

Ramiah, P V*

Elected: 1935
Last Address: Agricultural Research Institute, Coimbatore, India
***Deceased**

Education: BSc (Edin), MA.

Career: Agricultural Res. Inst., Coimbatore: Govt Agricultural Chemist.

Rana, Khadag Narsingh Jung Bhadur*

Elected: 1943
Last Address: Member, Rashtra Parishad, His Majesty's Government, Nepal, Singha Darbar, Kathmandu, Nepal
***Deceased**

Education: Univ. of Bombay: MSc, L Arch; Univ. of Berlin, Germany: MBCG; Univ. of London, UK: AIC.

Career: Govt of Nepal, Dept of Mines: Offr-in-Charge; Nepal Chemical Industries Ltd, Nepal: Dir; Joodha Res. Lab., Nepal: Dir; Chemist Member of the Filchner Expedition (Archeological and Geo. Magnetic Survey of the Govts of Germany and Nepal) 38–40; Assay Master of Royal Nepalese Mint at Kathmandu; Nepal Bureau of Mines, Kathmandu: Dir.

Memberships: Member: Rashtra Parishad, His Majesty's Govt, Nepal Board of Education of Nepal.

Randhawa, Mohinder Singh*

Elected: 1937
Specialization: Agriculture; Horticulture; Floriculture Phycology
Date and Place of Birth: 2 February 1909; Zira, Punjab
Parents: Sher Sing and Bachint Kaur
Spouse and Children: Iqbal Kaur; two *s*, one *d*
Last Address: Punjab Agricultural University, Ludhiana, Punjab
***Deceased:** 3 March 1986

Education: Panjab Univ.: BSc Hons 29, MSc, DSc 55.

Career: Indian Civil Services: Posted at Sahranpur 34–40; Addl Collector and Dist Magistrate, Allahabad 40–41, Collector Agra 41–45; ICAR, New Delhi: Secretary 45–46, Vice-President 55–60; Rehabilitation and Custodian Evacuee Property, Punjab: Additional Dir General, Dir General 49–51; Commissioner of Ambala Dn 51–53; Development Commissioner of Punjab 53–55, Chief Commissioner of Union Territory, Chandigarh 66–68; Ministry of Food & Agriculture, Govt of India: Additional Secretary 55–60, Special Secretary 64–66; Planning Commission, Natural Resources: Adviser 61–64; Punjab Agricultural Univ., Ludhiana: Vice Chancellor 68–76.

Scientific Work: Did extensive work on morphology, taxonomy, distribution and ecology of algae.

Important Publications: **(1)** *Evolution of life* (1968) CSIR. **(2)** *Zygnemaceae* (1959) ICAR. **(3)** *Flowering trees in India* (1961) ICAR.

Memberships: Fellow: INSA 43 • President: NASI.

Awards & Distinctions: Punjab Univ. Robe of Honour for Service to Punjabi Literature 68 • Royal Agro-Horticultural Soc. of India Grant Gold Medal 71 • Padma Bhushan 72 • Univ. of Udaipur: Dsc (hc) 74 • President of India Innovator in Agriculture Honour 76 • INSA Silver Jubilee Commemoration Medal 79.

Ranganath, Gobbalipur Shamanna

Elected: 1987
Specialization: Liquid Crystals; Optics
Date and Place of Birth: 20 April 1944; Bangalore, Karnataka
Parents: G S Shamanna and Sharadamma
Spouse and Children: Mangala; one *s* (Jayanth)
Address: No. 422, Chitta, 10th Cross, 8th Main, Padmanabhanagar, Bangalore 560 070, India
Tel. (080) 2669 2616 (R)
email: gs.ranganath@gmail.com

Education: Mysore Univ.: BSc 63; Bangalore Univ.: MSc 66, PhD 74.

Career: APS College, Bangalore: Lecturer in Physics 66; NAL, Bangalore, Materials Sc. Dn: Res. Fellow 67–72; RRI, Bangalore: Sci. 72–82, Assoc. Prof. 82–90, Prof. 90–2006.

Scientific Work: Has made major contributions to piezo-optics and optical diffraction in crystals and optics and mechanics of liquid crystals. Predicted the surprising result that stress induces optical activity in some optically inactive crystals. First to predict angular forces between disclinations and possibilities of attraction between like and repulsion between unlike disclinations. This naturally accounted for the existence of some very strange defect entanglements that had puzzled workers in the field. Showed that, magnetic fields, laser fields and structural biaxiality lead to new topological defects and instabilities. Prediction of new types of walls, have been experimentally confirmed. Studies on defects in liquid crystals have been specially commended by experts. Pointed out that layered liquid crystals can exhibit new types of flows and many superfluid analogies like temperature waves, A C Josephson effect, etc. Predicted many new nonlinear optical processes in liquid crystals like suppression of fluctuations, modulated structures, giant nonlinearities, peculiar phase transitions, etc.

Important Publications: **(1)** Piezo-rotatory coefficients and crystal symmetry (1969) *J. Opt. Soc. Am.* **59**, 1229. **(2)** On the rotatory dispersion in cholesteric liquid crystals (1976) *Opt. Commun.* **16**, 369. **(3)** Field induced chiral-achiral transitions in liquid crystals (1996) *J. de Physique* II **6**, 639. **(4)** Hydrodynamics of smecti-c liquid crystals: Field and flow-induced instabilities in confined geometries (1998) *Phys. Rev. E.* **57**, 5597. **(5)** New nonlinear optical processes in liquid crystals (2000) *Opt. Commun.* **180**, 349.

Memberships: Fellow: NASI 95.

Ranganath, Hassan Annegowda

Elected: 1995
Position: Dir, NAAC, Bangalore
Specialization: Zoology; Genetics; Evolution
Date and Place of Birth: 16 June 1948; Bangalore
Parents: H B Anne Gowda and Bhagyalakshmamma
Spouse and Children: Pramila; two *d*
Address: National Assessment and Accreditation Council (NAAC)
P.O. Box No. 1075, Nagarbhavi, Bangalore 560 072, India
Tel. (080) 2321 0267, (080) 2321 0261-65 (O), (080) 2321 0271 (R), Mobile: 99023 00909
email: director@naacindia.org, director.naac@gmail.com

Education: Univ. of Mysore: BSc 69, MSc 71, PhD 75.

Career: Univ. of Mysore, Dept of Zoology: UGC Res. Fellow 71–75, Lecturer 75–83, Reader 83–94, Prof. 94–2006; Bangalore Univ: Vice Chancellor 2006–08; Natl Assessment and Accreditation Council Dir 2008–.

Scientific Work: Dedicated researcher in population genetics of *Drosophila*. Demonstrated the pattern of genetic divergence in different groups of *Drosophila* by integrating the classical and molecular cytogenetics, hybridization, behaviour, ecogenetics, fitness, and isozyme studies. Long-range experimental analysis of raciation through hybridization is a landmark evolutionary experiment in *Drosophila*. These studies have the evidence for the evolution of homosequential species. Also established the Drosophila Stock Centre at Mysore as a National Resource Facility.

Important Publications: **(1)** Nanoscale organization of hedgehog is essential for long-range signalling (2008) *Cell*, **133**, 7, 1214–1227. **(2)** Molecular phylogeny of the nasuta subgroup of *Drosophila* based on 12S rRNA, 16S rRNA and CoI mitochondrial genes, RAPD and ISSR polymorphisms (2004) *Genes and Genetic Systems*, **79**, 5, 293–299. **(3)** Hybridization and introgression of the genomes of *Drosophila nasuta* and *Drosophila albomicans*: Evolution of new karyotypes (2003) *Genome* **46**, 4, 605–611. **(4)** Autoradiographic study of transcription and dosage compensation in the sex and neo-sex chromosome of *Drosophila nasuta nasuta* and *Drosophila nasuta albomicans* (2001) *Genome* **44**, 1, 71–78. **(5)** The chromosomes of two *Drosophila* races: *D. nasuta nasuta* and *D. nasuta albomicana*, IV. Hybridization and karyotype repatterning (1986) *Chromosoma* **93**, 3, 243–248.

Memberships: Fellow: NASI 2005; INSA 2006 • Member: New York Acad. of Sci.

Awards & Distinctions: INSA Young Scientist Award 78 • UGC Career Award 85 • Univ. of Mysore Golden Jubilee Award 94 • Prof. Y T Thathachari National Award for Science 2003 • Aryabhatta Award 2008.

Ranganathan, Darshan*

Elected: 1991
Specialization: Organic Chemistry; Bio-organic Chemistry; Molecular Biology
Date and Place of Birth: 4 June 1941; Delhi
Parents: Shanti Swarup Markan and Vidyawati
Spouse and Children: Subramania Ranganathan; one s (Anand)
Last Address: Deputy Director, Discovery Lab. Org III, IICT, Hydrabad 500 007, India
***Deceased:** 4 June 2001

Education: Univ. of Delhi: BSc Hons 61, MSc 63, PhD 66.

Career: Imperial College, London: Science Res. Scholar of the Royal Commission for the Exhibition of 1851, 67–69; IIT Kanpur: Res. Sci. 70–92; RRL, Trivandrum: Sci. 93–98; IICT, Hyderabad: Dy Dir 98–2001.

Scientific Work: Research has been on the chemical simulation of key and critical biological processes, at the molecular level, by strategies that closely follow established biochemical pathways and by choice of reagents and reaction conditions, which, based on mechanistic profile, modelled those involved in the natural transformations. Designed chemical nucleases that show specificity with respect to the site of scission; chemical simulation of the alpha-amidating action of pituitary enzymes, a key post-translational event in the generation of the hormones of the pituitary; the urea cycle where ornithine, as in nature, was projected as the carrier molecule, the ATP Imidazole cycle, wherein a daughter imidazole is created from a parent imidazole template via a cyclic pathway that is linked to the biosynthesis of ATP, GTP and histidine and the exclusive alpha-peptidation of aspartic and glutamic acids – seen *in vivo* but not preferred *in vitro* – using specially crafted reverse micellar systems. Follow up studies led to novel developments in the domains of organic synthesis, protein design, supra molecular chemistry and the crafting of chemical nucleases. These include a comprehensive analysis of peptide backbone modification by C^{α}-C side chain scission, the synthesis of novel retro-bispeptides by a bi-directional elongation strategies; the discovery of the persistent preference of the oxalamide unit to form a `bicyclo [3.3.0] octane' motif; the synthesis of chemical nucleases that recognize palindromic sequences in DNA, as with restriction enzymes and the demonstration of repetitive imidazole synthesis using an immobilized template.

Membership: Fellow: INSA.

Awards & Distinctions: INSA Jawaharlal Nehru Birth Centenary Vis. Fellowship • JNCASR A V Rama Rao Foundation Award • TWAS Award 99.

Ranganathan, S*

Elected: 1935
Last Address: Pasteur Institute, Coonoor, India
***Deceased**

Education: BA, MSc, AIISc.

Career: Pasteur Inst., Coonoor.

Ranganathan, Srinivasa

Elected: 1976
Position: Hon. Prof. and Sr Homi Bhabha Fellow, IISc, Bangalore
Specialization: Physical Metallurgy; Materials and Society; Science and Civilisation
Date and Place of Birth: 10 January 1941; Cuddalore, Tamil Nadu
Parents: Srinivasa Iyengar and Satyabhama Ammal
Spouse and Children: Sucharita, two *s*
Address: Department of Materials Engineering, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2360 1198 (O), (080) 2351 8521 (R), Mobile: 98803 97490
email: rangu@materials.iisc.ernet.in, rangu2001@yahoo.com

Education: Univ. of Madras: BSc Hons 60; IISc, Bangalore: BE 62; Cambridge Univ., UK: PhD 65.

Career: Peterhouse, UK: Res. Student 62–65; Lawrence Radiation Lab., USA: Res. Metallurgist 65–67; BHU Varanasi: Reader 67–73, Prof. 73–81; IISc, Bangalore: Prof. 81–2003, Hon. Prof. 2003–; Ontario Centre for Materials Res., Canada: KSIIDC Chair 91–93, Distinguished Lecturer 92.

Scientific Work: Contributed to physical metallurgy by examining metastable structures obtained by solid state and rapid solidification processing. Made pioneering contribution to a theory for the atomic configuration at grain boundaries in a publication which became a citation classic. Analysis of the geometry of grain boundaries led to a generating function for coincidence site lattices which has entered text books as the Ranganathan relation. As an early investigator in field-ion microscopy, used computer simulation of images in a successful fashion to derive the contrast from a variety of defects. Discovery of the decagonal and trigonal quasicrystals has won international acclaim. Identification of rational approximants and irrational interfaces has been pioneering. Innovative studies of the formation of metallic glasses and nanostructures by mechanical alloying has opened new vistas.

Memberships: Fellow: INSA 81; INAE 87; NASI 91; TWAS 2002 • Member: Indian Inst. of Metals.

Awards & Distinction: National Metallurgists Day Award 70 • IIM Kamani Gold Medal 71 • IIM G D Birla Gold Medal 89 • INSA Prize for Materials Sc. 91 • Homi Bhabha Award 91 • IISc Alumni Award 94.

Ranganathan, Subramania

Elected: 1975
Position: Distinguished Sci., IICT, Hyderabad
Specialization: Organic and Bio-organic Chemistry
Date and Place of Birth: 2 February 1934; Tirur, Kerala
Parents: S Subramanian and Ananthambal
Spouse and Children: Darshan; one *s* (Anand)
Address: Organic Chemistry Division III, Indian Institute of Chemical Technology, Uppal Road
Hyderabad 500 007, India
Tel. (040) 27191648 (O), (040) 2716 0040 (R)
email: ranga@iict.res.in

Education: Univ. of Madras: BSc 53, MSc 57; Ohio State Univ., USA: PhD 62; Harvard Univ.: Postdoc 62–64; Woodward Res. Inst., Switzerland: Assoc. 64–66.

Career: IIT Kanpur, Dept of Chem.: Asst Prof. 66–71, Assoc. Prof. 71–75, Prof. 75–94, Head 77–80, Prof. in-Charge of Faculty 80–81; CCMB, Hyderabad: Vis. Sci. 91, 92; Hyd. Univ.: Jawaharlal Nehru Vis. Prof. 95; JNCASR: Hon. Prof. 98–; RRL Trivandrum: INSA Sr Sci. 94–99; IICT Hyderabad: Disting. Sci. 98–.

Scientific Work: The rationalization of fascinating problems in organic reaction mechanisms; a chemical and thermochemical study of non-observed symmetry allowed reactions; a general route to prostaglandins by abnormal Nef reaction; the re-structuring of abundantly available natural products to rare bioactive materials: castor oil to prostaglandins and insect pheromones; carbosugars from cyclopentadiene. Protein engineering: the transformation of peptide side chains to metabolic inhibitors; enhancement of peptide side chain versatility: lysine sandwiched ionophores; role of spacer methylenes in protein evolution: spontaneous cyclization of chain shortened lysines; peptide secondary structures and chemoselectivity: selective Trp modification in gramicidin. Protein design: non-coded amino acids as autonomous protein domain surrogates; protein-DNA recognition: a structural model for zinc finger docking unit – DNA interactions; Protein evolution: deciphering of latent facets; crafted environments in chemical simulation of biological processes. Further research: Clathrin models: crafting of surfaces by non-covalent assembly; ribosomal protein synthesis using suppressor t-RNA; steroid/Gal 4 docking units-DNA interactions; role of zinc in viral coat assembly; chromosome telomeric ends: synthetic models; biological silica deposition mechanisms.

Memberships: Fellow: INSA 81; NASI 91 • Member: Indian Delegation Indo-French Seminar on Interfaces, Chantillis, France 91; Indian Delegation, Indo-French Seminar on Supramolecular Assemblies, Hyderabad 94.

Awards & Distinctions: Basudev Banerjee Medal and Prize 75 • S S Bhatnagar Award 77 • CDRI 40th Anniversary Award 91 • Vice-President: Indian Soc. Bio-organic Chem. 92–94 • President: Indian Soc. Bio-organic Chem. 94–2002; 5th IUPAC Symposium in Bio-organic Chemistry • R C Mehrotra Lecture and Gold Medal 2000 • Chem. Res. Soc. India Silver Medal 2000 • Chem. Res. Soc. India, Lifetime Achievement Award 2006.

Rangarajan, Pundi Narasimhan

Elected: 2007
Position: Prof., IISc, Bangalore
Specialization: Eukaryotic Gene Expression; Infectious Diseases
Date and Place of Birth: 15 April 1963; Bangalore, Karnataka
Parents: P K Narasimhan and P K Ambujam
Spouse and Children: Radha; one *s*, one *d* (Karthik, Meghana)
Address: Department of Biochemistry, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2360 1492, (080) 2293 2213 (O), (080) 2313 4380 (R)
email: pnr@biochem.iisc.ernet.in

Education: Bangalore Univ.: BSc 81, MSc 83; IISc: PhD 89.

Career: The Salt Inst., Calif., USA: Res. Assoc. 89–93; IISc: Asst Prof. 93–2001, Assoc. Prof. 2001–07, Prof. 2007–.

Scientific Work: Development and commercialization of recombinant hepatitis B vaccine (BEVAC, ELOVAC-B). Development of a novel combination rabies vaccine containing DNA vaccine and inactivated rabies virus. Identification and characterization of genes differentially expressed in mouse brain during virus infection such as the interferon-inducible tetratricopeptide repeat protein 2 (IFIT2/GARG39), a novel virus-inducible non-coding RNA (VINC/NEAT1), etc. Demonstration of antimalarial activity of curcumin, a component of the Indian spice, turmeric. Demonstration of peroxisomal localization of cytochrome c in the methylotrophic yeast, *Pichia pastoris*. Identification of determinants of target gene specificity of Mxr1p, a master regulator of methanol utilization pathway in *Pichia pastoris*.

Important Publications: **(1)** Immunization of plasmid DNA encoding the envelope glycoprotein of Japanese encephalitis virus induces protective immune response in mice in the absence of detectable antiviral antibodies (2000) *Vaccine* **18**, 68–75. **(2)** Pre-exposure efficacy of a novel combination DNA and inactivated rabies virus vaccine (2001) *Human Gene Therapy* **12**, 1917–1922. **(3)** Import of host delta-aminolevulinate dehydratase into the malarial parasite: Identification of a new drug target (2000) *Nat. Med.* **6**, 898–903. **(4)** Curcumin for malaria therapy (2005) *Biochem. Biophys. Res. Commun.* **326**, 472–474. **(5)** Identification and characterization of a virus-inducible non-coding RNA in mouse brain (2006) *J. Gen. Virol.* **87**, 1991–1995.

Memberships: Fellow: NASI 2002 • Member: Guha Res. Conf., India.

Awards & Distinctions: INSA Young Scientist Award 94 • IASc Assoc. 94–98 • S S Bhatnagar Prize • NASI-Reliance Industries Platinum Jubilee Award • B M Birla Science Prize 2000 • Biotech Product, DBT Process Commercialization Award 2001–04 • DBT National Bioscience Award 2001–04 • OPPI Scientist Award 2002 • Swarnajayanthi Fellowship 2003 • BRSI Industrial Medal 2004.

Rangarajan, Sarukkai Krishnamachary*

Elected: 1974
Specialization: Electrochemistry; Theoretical Chemistry
Date and Place of Birth: 9 September 1932; Madras
Last Address: The Institute of Mathematical Sciences, CIT Campus, Taramani, Madras 600 113, India
***Deceased:** 29 April 2008

Education: Univ. of Madras: BA Hons 53.

Career: Madras Christian College: Asst Lecturer 52–53; Alagappa Chettiar Coll., Madras: Asst Prof. 57–60; NAL Bangalore: Homi Bhabha Fellow 70–72, Sci. 72–75; Univ. of Madras: Teaching Maths 54–60; IISc, Bangalore, Dept of Inorganic and Physical Chem. 75–93; Inst. of Math Sci. Chmn: Sr Prof. 93–, Prof.; Central Electrochemical Res. Inst., Karaikudi: Sci. 60–70, Dir 89–92; Georgetown Univ., USA: Vis. Prof.; Homi Bhabha Fellow 70–72; Univ. of Newcastle-upon-Tyne, UK: Sr Res. Assoc. 64–65; Sci. Res. Council: Sr Vis. Prof. 77.

Scientific Work: Contributions pertain to a unified theory of phenomenological coupling at the interfaces, including nucleation and growth kinetics; a new theory of fluctuations and stochastic modelling of interfacial phenomena; discovery of novel relaxation techniques; charge-separation (electrical double layer) and adsorption, based on new statistical mechanical models of interfaces; and quantum mechanical descriptions of chemisorption and electron transfer across charged interfaces. Considered to be one of the foremost theoretical electrochemists in the world.

Memberships: Fellow: INSA 82; NASI; TWAS 89 • President: SAEST 90–92.

Awards and Distinctions: ESI T L Ramachar Award 90 • IACS SR Palit Award 88.

Rangaswami, Govindachetty*

Elected: 1960
Specialization: Agriculture; Microbiology; Plant Pathology
Date and Place of Birth: 10 May 1925; Salem, Tamil Nadu
Parents: N Govindachetty and G Bommakkal
Spouse and Children: Jayalakshmi; one *s*, one *d*
Last Address: 159, Dr Ramanujam Road, Devi Karumariamman Nagar, Valasaravakkam,
Madras 600 087, India
***Deceased:** 7 September 2005

Education: Univ. of Madras: BSc 46; IARI, New Delhi: MSc 53; Rutgers State Univ., USA: PhD 56.

Career: Annamalai Univ., Faculty of Agri.: Dean 58–65; UAS, Bangalore: Dean 65–71; Tamil Nadu Agri. Univ., Coimbatore: Founder Vice-Chancellor 71–78; Natl Acad. of Agri. Res., Govt of India, Hyderabad: Dir 78–80; Govt of India, Planning Commission: Adviser (Agri.) and Additional Sec. 79–81; Commonwealth Secretariat, London: Tech. Adviser (Agri.) 81–83; Univ. of Madras: Prof. Emeritus 85.

Scientific Work: Worked in the field of agricultural microbiology, with particular reference to influence of microbes on plant growth. Instrumental in effectively solving the pollution problem due to distilleries and breweries. This work has been acclaimed as the best at the national and international levels. Introduced microbiology as a separate subject at undergraduate, MSc and PhD levels in the agricultural colleges in India.

Memberships: President: Indian Phytopathological Soc.; Assn of Microbiologists of India; Indian Soc. of Horticultural Sci.

Awards & Distinctions: Rotary for the Sake of Honour Award 76 • Ariviyal Maamani of Tamilnadu 77 • Cambridge International Man of the Year 92–93.

Rangaswami, Srinivasa*

Elected: 1943
Specialization: Organic Chemistry; Medicinal Chemistry; Chemistry of Natural Products
Date and Place of Birth: 15 June 1912; Tiruvaiyaru, Tamil Nadu
Parents: Srinivasa Iyengar and Alamelammal
Spouse and Children: Lakshmi; one *s*, two *d* (Srinivasan, Komala, Prema)
Last Address: 9/9 Turnbull's Road, Nandanam, Madras 600 035, India
***Deceased:** 24 November 2000

Education: Univ. of Madras: BA Hons 36, MA 32; Andhra Univ.: PhD 38; Univ. of Basel, Switzerland: DPhil 48.

Career: Andhra Univ.: Lecturer 38–48, Prof. of Pharmaceutical Chem. and Head of Dept of Pharmacy 49–63; Advanced Centre for the Chem. of Natural Products, Delhi Univ.: Prof. 63–77; IDL Chemicals Ltd, Hyderabad: Adviser (R&D) 77–83.

Scientific Work: Discovered peruvoside, a potent cardiotonic drug. Initiated work on chemistry of wood-rotting fungi and complicated structure of saponins in India. Elucidated the structure of several novel steroidal and triterpenoidal substances.

Important Publications: **(1)** *Chemistry of vitamins and hormones* (1952). **(2)** *Peruvoside and other cardiotonic glycosides of T. nerifollia: Chemical, pharmacological and clinical studies* (1972). **(3)** Chemistry of plant products (1955) *Annu. Rev. Biochem.* (1955) **25**, 188. **(4)** Chemistry of *Tephrosia* species (1965) *Advancing frontiers in the chemistry of natural products,* Hindustan Pub. Co., New Delhi, 98 pp.

Memberships: Fellow: INSA 60; Indian Chemical Soc.; Royal Soc. of Chem. • Member: Pharmacy Council of India • President: Indian Pharmaceutical Assn.

Awards & Distinctions: INSA Silver Jubilee Commemoration Medal 70 • Indian Chemical Soc. P C Ray Medal.

Rangaswamy, Nanjangud Sreekantaiah

Elected: 1981
Specialization: Reproductive Physiology of Seed Plants; Plant Tissue Culture; Biotechnology
Date and Place of Birth: 8 May 1932; Srirangapatana, Karnataka
Parents: Nanjangud Sreekantaiah and Lakshamma
Spouse and Children: Lakshmi; one *d*, one *s* (Madhuri, Chaitanya)
Address: Apartment No. 241, III Floor, Block B-2, Kendriya Vihar, Bellary Road, Yelahanka
Bangalore 560 064, India
Tel. (080) 2846 1171 (R)
email: rlmc68@yahoo.co.in

Education: Univ. of Mysore: BSc Hons 54, MSc 55; Univ. of Delhi: PhD 60.

Career: Univ. of Delhi, Dept of Botany: Res. Asst 55–59, Lecturer 59–64, Reader 64–81, Prof. 81–97; Yale Univ., USA: Fulbright-Hays Fellow 64–65; Czechoslovak Acad. of Sci., Dept of Genetics: Vis. Sci. 69–70; Harvard Univ.: Biological Laboratories and Univ. of Hawaii, USA, Dept of Horticulture: Vis. Prof. and UNESCO Fellow 71–72; Nagoya Univ., Japan, Faculty of Agri., Inst. of Biochemical Regulation: Ford Foundation Exchange Fellow 76–77; Nagpur Univ., Dept of Botany: UGC Vis. Fellow 86.

Scientific Work: Established: cultures of nucellus and mature endosperm, test-tube fertilization in angiosperms, *in vitro* seed germination in obligate root parasites, the role of certain secondary metabolites in somatic embryogenesis, that hardseededness is a correlative function of the structure and chemistry of testa, seedling development from `unorganized' embryos is monopolar', developing seeds of cotton and vegetable cucurbits have a built-in chemical repressor of nucellar embryony, isovextin is a cytokinesis inhibitor, micropyle exhibits a valvular mechanism in seed imbibition, hydroquinone diacetate (an aryl ester) does occur in higher plants, with plant sperms gossypol is neither gametostatic nor gametocidal, and pollen can be effectively used to screen for salt tolerance.

Important Publications: **(1)** Culture of nucellar tissue of *Citrus in vitro* (1958) *Experiential* **14**, 3, 111–112. **(2)** Experimental studies on female reproductive structures of *Citrus microcarpa* Bunge (1961) *Phytomorphology* **44**, 11, 109–127. **(3)** Test-tube fertilization in a flowering plant (1962) *Nature (London)* **216**, 937–939. **(4)** Somatic embryogenesis in angiosperm cell, tissue and organ cultures (1986) *Proc. Indian Acad. Sci. (Plant Science)* **96**, 4, 247–271. **(5)** Screening of pollen grains vis-a-vis whole plants of oil-seed brassicas for tolerance to salt (1993) *Theor. Appl. Genetics* **87**, 343–346.

Memberships: Fellow: NASI 86; INSA 89; Intl Soc. of Plant Morphologists.

Awards & Distinctions: S Navashin Memorial Medal 90.

Ranu, Brindaban Chandra

Elected: 1995
Position: Sr Prof., IACS, Jadavpur
Specialization: Green Chemistry; Indium-mediated and Metal Nanoparticle-catalysed Reactions; Organic Synthesis
Date and Place of Birth: 1 August 1949; Murshidabad, West Bengal
Parents: Dukari Chandra Ranu and Bramhamayee
Spouse and Children: Supriya; one *s*, one *d* (Sayan, Koyel)
Address: Department of Organic Chemistry, Indian Association for the Cultivation of Science, Jadavpur
Kolkata 700 032, India
Tel. (033) 2473 4971/404 (O), (033) 2425 3856 (R), Mobile: 94330 53856
email: ocbcr@iacs.res.in; URL: http://bcranu.freehostia.com

Education: Calcutta Univ.: BSc Hons 68, MSc 70; Rice Univ., USA: MA 76; Jadavpur Univ.: PhD 82.

Career: Virginia Tech., USA, Dept of Chem.: Res. Assoc. 82–85; IACS, Calcutta, Dept of Organic Chem.: Lecturer 79–84, Sr Lecturer 85–89, Reader 89–96, Prof. 96–2005, Sr Prof 2005–.

Scientific Work: Notable achievements in the diverse aspects in organic synthesis have been the development of efficient and general strategy for the stereocontrolled construction of highly functionalized carbocyclic systems towards the synthesis of complex natural products involving novel cyclobutane rearrangement and cyclobutyl radical fragmentation; new applications of zinc borohydride for useful chemo-, regio- and stereoselective reductions; introduction of simple and efficient technologies for complex chemical reactions imparting high selectivity through surface-mediated reactions utilizing cheap and commercially available materials like silica gel and alumina; and novel uses of organozinc reagents for the preparation of useful synthons; and novel applications of ionic liquids and metal nanoparticles in the catalysis of organic reactions.

Important Publications: **(1)** Remarkable influence in ionic liquid in control of reaction: Simple, efficient and hazardous organic solvent free procedure for the synthesis of 2-aryl benzimidazoles promoted by ionic liquid, [pmim] BF_4 (2009) *Green Chem.* **11**, 733. **(2)** One-pot copper nanoparticles-catalyzed green synthesis of *s*-aryl- and *s*-vinyl dithiocarbamates in water: High diastereoselectivity achieved for vinyl dithiocarbamates (2008) *Green Chem.* **10**, 1224. **(3)** Hydroxyapatite supported palladium (PdHAP) catalysed efficient synthesis of (E)-2 -alken-4yn carboxylic esters. Intense fluorescence emission of selected compounds (2008) *J. Org. Chem.* **73**, 5609. **(4)** A new route to the synthesis of (E)- and (Z)-2-alkene-4-yne-oates and nitriles from vicinal-diiodo-(E)-alkenes catalysed by Pd(0) nanoparticles in water (2007) *Org. Lett.* **9**, 2409. **(5)** An improved procedure for the three-component synthesis of highly substituted pyridines using ionic liquid (2007) *J. Org. Chem.* **72**, 3152.

Memberships: Fellow: INSA 2008; West Bengal Acad. of Sci. & Technology 94.

Awards & Distinctions: N S Narasimhan Res. & Edn Trust Endowment Award 93 • DST J C Bose Natl Fellowship 2009 • CRSI Silver Medal 2010.

Rao, Argula Nagaraja*

Elected: 1935
Specialization: Sugar Technology
Date of Birth: 15 November 1906
Last Address: Ministry of Commerce and Industry, Development Wing, Shahjahan Road, New Delhi, India
***Deceased:** 2 July 1967

Education: Mysore Univ.: BSc, DSc, AIC; Calcutta Univ.: MSc; Berlin Univ.: Dr Ing.

Career: Mysore Univ.: Lecturer in Chem. 28–36; Natl Sugar Inst., Kanpur: Physical Chemist 36–42; Tata Chemicals: Chief Chemist 42–44, Eastern Chemical Co.: Gen. Mgr/Managing Dir 44–50; Planning Commission: Chief of Dn (Industry, Trade & Transport) 50; Ministry of Commerce & Industry: Industrial Adv. (chemicals) 51–54, Chief Industrial Adv. 54–58, Joint Sec. 54–59; Heavy Engg Corpn: Chmn 59–64.

Awards & Distinctions: Padma Shri 58.

Rao, Amur Narasinga*

Elected: 1934
Specialization: Applied Mathematics; Theoretical Physics
Date of Birth: 12 December 1893
Last Address: Dr Rajendra Prasad Road, Nehrunagar, Chromepet Post, Madras, India
Spouse: Namagiri
***Deceased:** 2 July 1967

Education: Univ. of Madras: DSc.

Career: Annamalai Univ., Chidambaram: Prof. and Head of Mathematics 29–46; Andhra Univ., Waltair: Prof. and Head of Theor. Phys. 46–51; Madras Inst. of Technol., Madras: Prof. of Applied Maths 51–56, Prof. Emeritus 56–67.

Rao, Addicam Jagannadha

Elected: 1993
Position: Raja Ramanna Fellow, DST, IISc, Bangalore
Specialization: Regulation of Placental Function; Biochemistry of Placental Proteins; Differentiation of Endocrine Tissues; Primate Biology
Date and Place of Birth: 11 July 1942; Madanapalli, Andhra Pradesh
Parents: Narayana Rao and Lalitha
Spouse and Children: Rukmini; two s (Sanjay, Vijay)
Address: Department of Biochemistry, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2360 8660, (080) 2293 2308 (O), (080) 2650 7124 (R), Mobile: 98458 02391
email: ajrao@biochem.iisc.ernet.in, ajrao_2000@yahoo.com

Education: Univ. of Andhra: BSc 61, MSc 64; IISc, Bangalore: PhD 71.

Career: Univ. of California, Hormone Res. Lab: Postdoc Fellow 73–77; Univ. of Sharbrooke, Canada, Dept of Biochem.: Professional Asst. 77–79; IISc, Bangalore, Dept of Biochem.: Post doc 71–73, Family Planning Foundation Fellow 79–82, Asst Prof. 82–87, Assoc. Prof. 87–91, Prof. 91–2005, Rajarammana Fellow, DST 2007–; CSIR Emeritus Sci 2004–2007, Chmn of Centre for Reproductive Biology and Molecular Endocrinology 94; Convener, Primate Res. Lab. 91–2002; Central Animal Facility: Chmn 91–94.

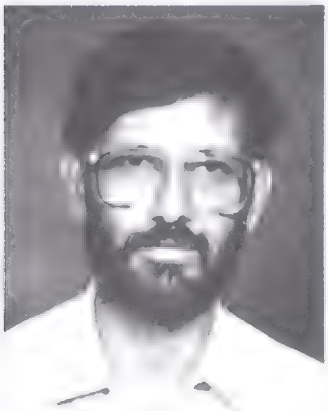
Scientific Work: Using cells from human placenta and cells from testis and epididymis demonstrated that the tropic hormones such as FSH, LH, GnRH and Estradiol 17–β exert differential action depending on the stage of differentiation of these cells. It was also demonstrated that estradiol 17–β has an important role in sperm maturation and by interfering with the action of estradiol 17–β at the epididymal level, sperm maturation can be interfered and thus block male fertility. Has shown that administration of extremely low doses of a testosterone derivative namely 7 α-methyl-19-nor testosterone results in blockade of fertility in the adult male bonnet monkey.

Important Publications: **(1)** Effects of ICI 182780 on estrogen receptor expression, fluid absorption and sperm motility in the epididymis of the bonnet monkey (2005) *Reproduct. Biol. Endocrinol.* **3**, 10. **(2)** Demonstration of follicle-stimulating hormone receptor in cauda epididymis of rat (2006) *Biol. Reproduct.* **75**, 98–106. **(3)** Hormonal regulation of human trophoblast differentiation: A possible role for 17β-estradiol and GnRH (2004) *Mol. Cellular Endocrinol.* **218**, 79–94. **(4)** Reversible immunocontraception in male monkeys immunized with Eppin (2004) *Science* **306**, 1189–1190. **(5)** Gene expression profiling during Forskolin induced differentiation of BeWo cells by differential display RT-PCR (2008) *Mol. Cellular Endocrinol.* **281**, 37–46.

Memberships: Endocrine Soc., USA; Soc. for Study of Reproduction, USA; Soc. for Biological Chemists, India • Fellow: NASI 99; INSA 2000; NAMS • Sr Assoc.: Natl Inst. of Advanced Studies • Vice-President: Soc.of Biological Chemists, India • Editorial Board Member: The Open Andrology; World Journal of Diabetes.

Awards & Distinctions: ICMR Award 91 • Morehouse School of Medicine, Atlanta, GA, USA DBT Short Term Research Scientist 91 • M Srinivasayya Award 92 • Rockefeller Foundation Biotechnology Career Development Award 86–92 • INSA MRN Prasad Memorial Lecture 2004 • ESICON Subhash Mukherjee Memorial Oration Award 2007 • SRBMCE, Chennai, Scroll of Honour 2008 • Shanta S Rao Memorial Oration 2009.

Rao, Aroor Pramesh



Elected: 1997
Specialization: Sun and Solar Wind; Wave Propagation in Random Media; Aperture Synthesis; Radio Imaging
Date and Place of Birth: 18 January 1948; Trivandrum, Kerala
Parents: Rao Aroor Rajagopalakrishna and Bhavani
Spouse and Children: Parvathy; one *s*, one *d*
Address: Flat 7, Khagol Housing Society, Panchavati, Pashan, Pune 411 008, India
Tel. (020) 66280183 (R), Mobile: 98507 45504
email: prameshrao@gmail.com

Education: Kerala Univ.: BSc 66; Andhra Univ.: MSc 68; Bombay Univ.: PhD 75.

Career: TIFR: Vis. Member 68–75, Fellow, Reader, Assoc. Prof. 75–date; Univ. of Maryland, USA: Res. Assoc. 76–79; Max Planck Inst. for Radio Astronomy, Germany: Alexander Von Humboldt Fellow 87– 88; Univ. of Groningen, The Netherlands: NWO Fellow 88–89.

Scientific Work: Instrumental in setting up the interplanetary scintillation (IPS) programme at Ooty, when the Ooty radio telescope became operational in 1970. The basic data acquisition, analysis and interpretation of the data was implemented as part of PhD thesis. The IPS programme has been one of the major programmes at Ooty, providing a wealth of information on the solar wind, interstellar medium and the fine structure of radio sources. Along with S Ananthakrishnan, undertook an IPS survey of the inner parts of our galaxy using the ORT, which showed, for the first time, enhanced interstellar scattering in the inner galaxy. In following up the sources detected in this survey, highlighted the interesting properties of one of the sources, PKS 1830–211, and suggested that it could be a gravitational lens system. This has subsequently been confirmed, but the Ooty lens continues to be the strongest lensed system at radio wavelengths. With Gothoskar, carried out high time resolution studies of the solar wind using the ORT which showed the existence of short time scale transients in the IPS data with timescales of minute and hour and which could be interpreted as due to coronal transients with appropriate geometries. In addition to astronomy, maintained an interest in the technical aspects of radioastronomy. in 1970, when the ORT was being commissioned, wrote the data acquisition software for both the IPS and the lunar occultation programmes, at a time when computers were just being introduced. Also wrote data acquisition programmes for Ooty synthesis radio telescope around 1980 and was the leader of the team that was responsible for the control and monitor software of the GMRT. Has also written offline software for analysing data as and when necessary. Played an important role in the commissioning of the GMRT, taking part in the debugging efforts, ensuring data quality and establishing procedures for producing synthesis images using the GMRT. With students and postdocs, worked on a variety of subjects using GMRT, including studies of the galactic centre, a low frequency survey of the galactic plane and observations of interesting extragalactic radio sources.

Important Publications: **(1)** Observations of interplanetary scintillations at 327 MHz (1974) *Aust. J. Phys.* **27**, 105. **(2)** Interstellar scattering in the inner parts of the galaxy (1984) *Nature*, **312**, 707. **(3)** 1830–211 – A flat spectrum radio source with a double structure (1988) *Mon. Not. R. Astron. Soc.* **231** , 229. **(4)** On observing mass ejections in the interplanetary medium (1999) *Solar Physics* **185**, 361. **(5)** Sgr A* at low radio frequencies: Giant metrewave radio telescope observations (2005) *Mon. Not. Roy. Astr. Soc.* **360**, 1305.

Memberships: Intl Astronomical Union; Astronomical Soc. of India.

Awards & Distinctions: Vikram Sarabhai Res. Award 93.

Rao, Ayyagari Sambasiva*

Elected: 1974
Specialization: Electronics and Radiation Implications
Date and Place of Birth: 20 September 1914; Mogallu, West Godavari Dist, Andhra Pradesh
Parents: Ayyagari Venkatachalam and Sundaramma
Spouse and Children: Annapurna; four *s*, three *d*
Last Address: 1-32, Snehapuri, Nacharam Post, Hyderabad 501 507, India
***Deceased:** 31 October 2003

Education: BHU, Varanasi: BSc 37, MSc 39; Stanford Univ., USA: BE 47.

Career: BHU: Demonstrator, Lecturer 40–48; TIFR, Dept of Experimental Phys.: Reader 48–53; BARC, Bombay: Dir of Electronics Group: Dir of Radiation Protection 53–73; Electronics Corpn of India Ltd, Hyderabad: Managing Dir 67–78.

Scientific Work: Headed the project of designing, fabricating, installing and commissioning the control and radiation monitoring system for Asia's first nuclear reactor APSARA, control and safety system for the second larger reactor CIRUS and designing, fabricating and installation of electronic system for a third research reactor ZERLINA, control panel and safety system for the plutonium plant; engaged in manufacture of active and passive components, nuclear, measuring and medical instruments, safety equipment, industrial automation and control systems, computers, TV sets and communication systems.

Memberships: Fellow: Andhra Pradesh Acad. of Sci. • Member: Govt of India's Electronics Commission.

Awards & Distinctions: Padma Shri 60 • S S Bhatnagar Award 65 • Andhra Univ.: DSc hc 69 • Padma Bhushan 72 • National Design Award 77.

Rao, B K Narayana*

Elected: 1934
Specialization: Ophthalmology; Surgeon
Date and Place of Birth: 12 March 1884; Basavapatna, Mysore
Parents: Keshava Rao and Lakshamma
Spouse: Nacharamma
Last Address: Manonidhi, Vanivilas Road, Basavangudi P O, Bangalore 560 004, India
***Deceased:** 17 July 1966

Education: Univ. of Mysore: BA, MB; Oxford Univ.: MRCS, DPH.

Career: Mysore Med. Service: Dist Hospital, Shimoga: Opthalmologist, Surgeon, Physician, Gynecobsterician: upto 22; Minto Opthalmic Hospital, Bangalore: Supdt 23; Dir Medical Services up to 41; Prabha Eye Clinic, Bangalore 40.

Scientific Work: First eye surgeon of Mysore State; opened Prabha Eye Clinic in Visveswarapuram, Bangalore; Helped establish the Mysore Medical College in 1925 and Bangalore Medical College.

Memberships: Founder Member: All India Opthalmol. Soc.

Awards & Distinctions: Palace Physician in Mysore • Physician to Nizam of Hyderabad.

Rao, Bellur Rama*

Elected: 1935
Specialization: Petrography; Mineralogy; Economic Geology
Date and Place of Birth: 20 November 1891; Chitradurga, Karnataka
Spouse and Children: Narasamma; three *s*, three *d*
Last Address: Sri Vilas, 291, Visveswarapuram, Basavanagudi Post, Bangalore 560 004, India
***Deceased:** 15 February 1970

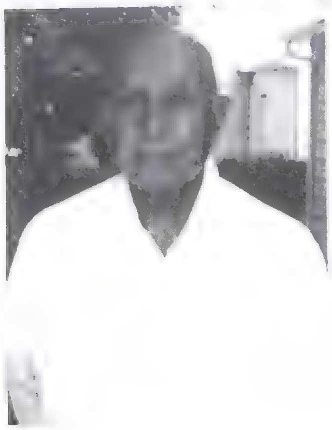
Education: Univ. of Madras: BA Hons 14, MA Hons 16; Diploma of Imperial College, London 33.

Career: Mysore Geological Dept: Probationer 15–18, Asst Geologist 18–35, Dir 35–48; Indian Bureau of Mines: Jt Dir 48–51, Dir 51.

Scientific Work: Known for research on the ancient schistose rock formations of India, known in Indian geology as the Dharwar supergroup. Was the first to question the all igneous view prevailing till then and initiated sedimentological and stratigraphic studies. Extensive field work brought to light unmistakable signs of sedimentation in the schistose rocks setting at rest the doubts about their sedimentary origin. Was the first to initiate geophysical surveys in Mysore State. Two major works, *`Archaean complex of Mysore'* and *`Charnockitic rocks of Mysore'* are frequently referred in literature.

Memberships: Fellow: INSA 35 • President: Geological and Geography Sec. of the Indian Sci. Congress; Geological Mining and Metallurgical Soc. of India 42–43; Geol. Soc. India.

Rao, Basavapatna Narayana Balakrishna*



Elected: 1945
Specialization: General Surgery especially in Renal Diseases
Date and Place of Birth: 21 January 1910; Channapatna, Karnataka
Parents: B K Narayana Rao and Nacharamma
Spouse and Children: Rukmini; three *s*, three *d*
Last Address: 17/1, Vani Vilas Road, Basavanagudi, Bangalore 560 004, India
***Deceased:** 7 March 1995

Education: Univ. of Mysore: BSc Hons 28; Univ. of Bombay: MBBS 33; LRCP, MRCS England 36, FRCS England 37.

Career: Mysore Govt: Asst Surgeon, District Med. and Health Offr 38; Mysore Med. College, Dept of Surgery: Lecturer 38–40, Prof., Head 45–47; G R Med. College, Gwalior, Dept of Surgery: Prof. Head, 47–54; Dean, Superintendent 54–64; All India Inst. of Med. Sci.: Prof., Head, Emeritus Prof., Superintendent 64–72; Indian Council of Med. Res.: Emeritus Sci. 72–75; Northern Railway Hospital, New Delhi: Vis. Surgeon and Adviser.

Scientific Work: First surgeon in India to perform pre-frontal leucotomy operation on psychiatric patients, jointly with late M V Govindaswamy. Conducted sustained work on the causation of urolithiasis. Skill in practice, teaching and research in surgery was recognized by several learned bodies, commencing with Indian Medical Association.

Memberships: Fellow: London Royal Soc. of Medicine; Urolithiasis Soc. of India; NASI.

Awards & Distinctions: Padma Shri • R O Medal from the Indian Army • Hon. Surgeon to President of India.

Rao, Basrur Sanjiva*

Elected: 1934
Specialization: Inorganic; Physical; Mineral Chemistry
Date and Place of Birth: 23 February 1895; Coondapur, Karnataka
Parents: B Subba Rao
Spouse and Children: Radhabai; three *s*, two *d*
Last Address: Radha Nivas, 10th Main Road, Malleswaram, Bangalore 560 003, India
***Deceased:** 3 March 1975

Education: BA 15, MA, PhD; Univ. of London, UK: PhD 26, DSc 42

Career: Central College, Bangalore: Demonstrator 15, Asst Prof. 18, Prof. 18: IISc, Bangalore: Nizam Prof. of Chem. 47; Gauhati Univ., Jalukbari 26–47: Prof. of Chemistry 48–61.

Scientific Work: Carried out extensive work in area of adsorption. Work on oxides of sulphur monoxides and other sulphur components is quite unique. In later years, was also interested in the area of soil chemistry.

Rao, Bijoor Sanjiva*

Elected: 1936
Specialization: Organic Chemistry; Organic Technology
***Deceased**

Education: Univ. of Madras: BA 18, MSc 29; IISc, Bangalore: AIISc 23, FIISc 33; Univ. of London: DSc 46.

Career: Res. Asst, Sr Asst Chem: Up to 43.

Scientific Work: Studied the chemistry of curcumene, worked on specimens of oil from *Decalepis hamiltonii,* West Australian sandalwood oil and many essential Indian oils.

Important Publications: **(1)** 2:4:5-trimethoxy-2-ally-benzene Asarone (allyl) (1935) *Curr. Sci.* **3**, 552. **(2)** The amylose and the amylopectin contents of rice and their influence on the cooking quality of the cereal (1952) *Proc. Indian. Acad. Sci.* **36**, 70–80. **(3)** The occurence of sylvestrene (1925) *J. Chem. Soc. London* **127**, 2494. **(4)** Essential oil from the rhizomes of *Acorus calamus* (1934) *J. IISc* **A17**, 25–31.

Rao, Coimbatore Raghavendra Narayana*

Elected: 1934
Specialization: Zoology
Date and Place of Birth: 15 August 1882; Coimbatore
Last Address: Central College, Bangalore, India
***Deceased:** 2 January 1960

Education: Univ. of Madras: BA, MA.

Career: Central College, Bangalore: Asst Prof. 09–17, Prof. 17–30; Univ. of Mysore: Prof. of Zoology, Head of Zoology Dept and Principal till 37.

Scientific Work: Named and described many species of frogs. Work on the archenteric and segmentation cavities of frogs was recognized as a reorientation of the concepts of amphibian development. Account of the ovarian ovum of the slender Loris formed part of J P Hill's Croonian Lecture to the Royal Society. Described the new microhylid genus *Ramanella*. Involved in the integration of research into university education. Was among those responsible for starting *Current Science* and was its first editor from 1932–42.

Rao, Chintakindi Venkata Hanumantha*

Elected: 1934
Specialization: Mathematics
Date of Birth: 1892
Parents: Chintakindi Bhagavanulu and Jogamma
Spouse and Children: Venktata Lakshmi; two *s*, two *d*
Last Address: Punjab University, Lahore
***Deceased:** 2 September 1947

Education: Univ. of Madras: BA, MA; Univ.of Cambridge, UK: Maths Tripos 14

Career: Punjab Univ., Lahore: Prof. of Mathematics 20–47.

Scientific Work: Studied and taught various branches of pure mathematics and in particular geometry.

Memberships: Fellow: INSA 35.

Rao, Calyampudi Radhakrishna

Elected: 1974
Position: Prof. Emeritus, Penn. State Univ.
Specialization: Mathematical Statistics USA Applications to Biology
Date and Place of Birth: 10 September 1920; Huvina Hadagali, Karnataka
Parents: Calyampudi Doraswamy Naidu and A Laxmikanthamma
Spouse and Children: Bhargavi; one *s*, one *d*
Address: C R Rao Advanced Institute, Near University Post Office, University of Hyderabad
Hyderabad 500 046, India
Tel. 040 2313 1170 (O), Mobile: 97015 25034
email: crr1@psu.edu

Education: Andhra Univ., Waltair: MA 40; Calcutta Univ.: MA 43; Cambridge Univ., UK: PhD 48, ScD 65.

Career: ISI, Calcutta: Statistician 44–48, Prof. and Head of Res. & Trg School (RTS) 49–63, Dir of RTS 64–72, Sec. & Dir 72–76, Jawaharlal Nehru Prof. 76–84, National Prof. 87–92; Univ. Prof., Univ. of Pittsburgh, USA: 79–88, Eberly Prof. of Statistics 89–2001, Center for Multivariate Analysis, Penn Stat: Dir 89–.

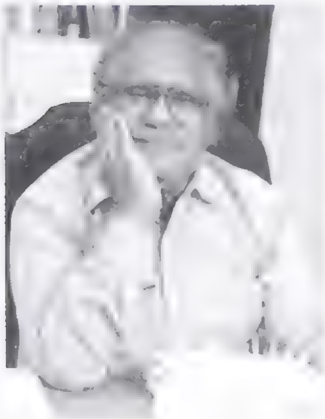
Scientific Work: Pioneering contributions to areas of statistical theory and applications especially estimation, multivariate analysis, design of experiments and combinatorics, characterization of probability distributions, generalized inverse of singular matrices, etc. Developed estimation theory in small samples, which greatly extended the scope of statistical methods in practical work. Many results bear his name like Cramer–Rao lower bound, Rao–Blackwell theorem, Rao–Blackwellization, Fisher–Rao theorem, Rao theorem and Rao's second order efficiency. Introduced new combinatorial arrangements called orthogonal arrays, which opened up a wide field of industrial experimentation for finding the optimum mix of materials for production and improving quality. This is a major contribution to research in experimental designs and coding theory while yielding a rich dividend in the use of statistics for quality engineering in the industrial sector world wide. Introduced differential geometric techniques in discussing problems of statistical inference, based on Fisher–Rao metric, Rao's distance function, Rao measure, Cramer–Rao functional. Introduced a broad definition of generalized inverse of matrices which is useful in statistical data analysis when the variables are possibly related. Introduced a broad class of asymptotic tests of hypotheses, called Rao's score statistics and the Neyman–Rao statistic, which opened up a rich field for theoretical research and applications in biology, econometrics, and other areas. Concept of weighted distributions is valuable in the analysis of encountered data in ecology and genetics.

Important Publications: **(1)** *Linear statistical inference and its applications*, John Wiley, Translated into 8 languages. **(2)** *Statistics and truth: Putting chance to work*, World Scientific, Translated into 5 languages. **(3)** *Generalised inverse of matrices and applications*, Wiley, Translated into Japanese. **(4)** *Matrix algebra and its applications to statistics and econometrics*, World Scientific. **(5)** *Choquet–Deny type functional equations with applications to stochastic models*, Wiley.

Memberships: Fellow: INSA 54; TWAS 83; NASI 88; Royal Soc. 67 • Member: US Natl Acad. Sci.

Awards & Distinctions: S S Bhatnagar Award 63 • Royal Statistical Soc. Guy Medal 65 • Meghnad Saha Medal 69 • American Statistical Assn • J C Bose Gold Medal 79 • S S Wilks Medal 89 • Mahalanobis Birth Centenary Medal 96 • Army Wilks Award 2000 • Padma Vibhushan 2001 • National Medal of Science, USA 2002 • Srinivasa Ramanujan Medal 2003 • Mahalanobis International Prize 2003.

Rao, Chintamani Nagesa Ramachandra



Elected: 1965
Position: National Res. Prof. and Linus Pauling Res. Prof., JNCASR, Bangalore
Specialization: Solid State Chemistry; Surface Science; Spectroscopy; Molecular Structure
Date and Place of Birth: 30 June 1934; Bangalore
Parents: H Nagesa Rao and Nagamma
Spouse and Children: Indumati; one *s*, one d
Address: Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore 560 064, India
Tel. (080) 2365 3075, (080) 2208 2761 (O), (080) 2360 1410 (R)
email: cnrrao@jncasr.ac.in; URL: http://www.jncasr.ac.in/cnrrao

Education: Univ. of Mysore: BSc 51, DSc 61; BHU, Varanasi: MSc 53; Purdue Univ., USA: PhD 58.

Career: IISc, Bangalore: Lecturer 59–63, Prof. 76–84, Dir 84–94; IIT Kanpur: Assoc. Prof., Prof., Dean of Research 63–76; JNCASR, Bangalore: Founder-President 89–99; Albert Einstein Prof. 95–99, Linus Pauling Res. Prof. 2000–.

Scientific Work: Contributed widely to several aspects of spectroscopy and structure by employing vibrational, electronic and high-energy spectroscopies. Besides complex molecules, has investigated molecular interactions by these techniques. An important area of vital interest to which monumental contributions have been made is solid state chemistry. In this area, carried out extensive studies related to tailor-making of complex solids, structure-property relations, defect solids, phase transitions, superconducting materials and novel synthetic methods. Also contributed significantly to surface science, fullerenes and nano materials.

Important Publications: **(1)** *Trends in chemistry of materials* (2008) World Scientific, A selection of 60 research papers of C N R Rao. **(2)** *Nanomaterials chemistry: Recent trends and new directions* (2008) Wiley-VCH. **(3)** Liquid–liquid interface as a medium to generate nanocrystalline films of inorganic materials (2008) *Acc. Chem. Res.* **41**, 489. **(4)** Hybrid inorganic-organic materials: A new family in condensed matter physics (2008) *J. Phys. Condens. Matter* **20**, 083202. **(5)** Kagome network compounds and their novel magnetic properties (2008) *Chem. Commun.* 4683. **(6)** Electronic phase separation and other novel phenomena and properties of rare earth manganites and related materials (2008) *Phil. Trans. R. Soc.* (Lond.) **A366**, 63. **(7)** Metal complexes of organophosphate esters and open-framework metal phosphates: Synthesis, structure, transformations and applications (2008) *Chem Rev.* **108**, 3549.

Memberships: Member: Pontifical Acad. of Sci. • Founder Fellow: NASI; R. Soc. of London • Fellow: INSA 74; TWAS 83; Indian Sc. Congress • Founder President: Materials Res. Soc. of India • Foreign Assoc: National Acad. of Sci., USA • Hon. Foreign Member: American Acad. of Arts & Sci.; Am. Philos. Soc.; Russian Acad. of Sci.; Polish Acad. of Sci.; French Acad.; Japan Acad.; Slovenian Acad. of Sci. • Chmn: IUPAC Committee • Hon. Fellow: R. Soc. Canada; IETE; Materials Res. Soc. of Japan and Korea; Intl Acad. of Ceramics • Past President: NASI.

Awards & Distinctions: Faraday Soc. of England Marlow Medal 67 • S S Bhatnagar Award 68 • Padma Shri 74 • American Chemical Soc. Centennial Foreign Fellowship 76 • S N Bose Medal 80 • Royal Soc. of Chem. Medal 81 • Padma Vibhushan 85 • Hevrovsky Gold Medal 89 • Meghnad Saha Medal 90 • CSIR Golden Jubilee Award 91 • Hughes Medal of R. Soc. 2000 • Indian Science Award 2004 • Dan David Prize 2005 • Chevalier de la Legion D' Honneur 2005 • Royal Medal of R. Soc. 2009 • Abdus Salam Medal 2009.

Rao, Desirazu Narasimha

Elected: 1999
Position: Chmn, Dn of Biological Sciences, IISc, Bangalore
Specialization: Protein–DNA Interactions using Restriction-Modification Enzymes; DNA Mismatch Repair Proteins as Model Systems
Date and Place of Birth: 17 September 1954; Mysore, Karnataka
Parents: D Krishna Rao and D Srilakshmi
Spouse and Children: Minakshi; one *d* (Priyanka)
Address: Department of Biochemistry, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2293 2538 (O), (080) 2361 1677 (R)
email: dnrao@biochem.iisc.ernet.in

Education: Delhi Univ.: BSc 75; G B Pant Univ. of Agri. and Tech.: MSc 77; IISc: PhD 82.

Career: National Inst. of Health: Vis. Fellow 83–85; Biozentrum, Univ. of Basel: Postdoc Fellow 86–88; Univ. of Cambridge: Postdoc Fellow 88–89; IISc: Asst Prof. 89–95, Assoc. Prof. 95–2001, Prof. 2001–date Chmn, Dn of Biological Sciences 2005–.

Scientific Work: The long term goal of the laboratory is to understand how restriction–modification (R–M) enzymes and DNA repair proteins achieve their specificity. Using atomic force microscopy to study EcoP15I DNA pre-cleavage complexes, Type III restriction enzymes have been shown to locate specific recognition sequences by diffusional searching of the DNA followed by ATP-driven collision of DNA–bound proteins. Has shown the presence of well-conserved Mg^{2+}-binding motifs within EcoPI and EcoP15I DNA methyltransferases and substitution of an amino acid within this motif converts EcoP15I methyltransferase to an active sequence–dependent restriction endonuclease. Studies with *Helicobacter pylori* R-M systems show intriguing features like their inherent phase-variation and their roles in gene regulation and host-pathogen interaction. Functionally characterized *Haemophilus influenzae* DNA mismatch repair proteins like MutH, MutL, MutS, RecJ and SSB and demonstrated that *Neisseria gonorrhoeae* MutL protein displays manganese-dependent DNA-specific endonuclease activity, suggesting different mode of excision initiation during mismatch repair in organisms that lack the nicking endonuclease MutH.

Important Publications: **(1)** Functional cooperation between exonucleases and endonucleases – basis for the evolution of restriction enzymes (2003) *Nucleic Acids Res.* **31**, 1888–1896. **(2)** Identification and mutational analysis of putative magnesium binding site in EcoP15I DNA methyltransferase – a role in target base eversion (2003) *J. Biol. Chem.* **278**, 41837–48. **(3)** Unidirectional translocation from recognition site and a necessary interaction with DNA end for cleavage by type III restriction enzymes (2004) *Nucleic Acids Res.* **32**, 5703–5711. **(4)** MutH complexed with hemi- and unmethylated DNAs: Coupling base recognition and DNA cleavage (2005) *Mol. Cell* **20**, 155–166. **(5)** A mutation in the mod subunit of EcoP15I restriction enzyme converts the DNA methyltransferase to a site-specific endonuclease (2007) *J. Biol. Chem.* **282**, 3520–3530.

Memberships: Fellow: NASI 2003; INSA 2007; Soc. of Biological Chemists, India.

Awards & Distinctions: P S Sarma Memorial Award 97 • C V Raman Young Scientist Award 99 • Y T Thathachari Award For Science 2007 • J C Bose Fellow 2008.

Rao, Dhanvada Madhava

Elected: 1974
Specialization: Aerodynamics and Fluid Mechanics
Date and Place of Birth: 4 July 1932; Allahabad, Uttar Pradesh
Parents: Dhanvada Hari Ramachandra Rao and Parameswari
Spouse and Children: Velala Padmavati; two s
Address: No. 406, Tides Run, Yorktown, Virginia 23692, USA
Tel. (+1-757) 890 0965 (R)
email: m.dhanvada@att.net

Education: Univ. of Allahabad: BSc 50; Course in Aircrafts Maintenance Engg 51; Univ. of London: BE 52, DIC 53, PhD 70.

Career: Fokker Aircraft Co., Amsterdam: Vacation Attachment 52; DeHavilland Aircraft Co., UK: Technical Asst 53–55; IISc, Bangalore, Dept of Aeronautics: Lecturer 55–60; NAL, Bangalore: Sr Sci. Offr 60–64, Asst Dir 64–72, Dy Dir 72–75; NASA Langley Res. Centre, USA: National Res. Council Postdoc Assoc. 70–72; Vigyan Incorporated, USA: Co-Founder and Principal Vice-President 79.

Scientific Work: Aerodynamic performance and manoeuverability enhancement of supersonic and combat aircraft operating at high angles of attack and in post-stall regime via innovative vortex flow management techniques. Led the CSIR team to design and establish a transonic/supersonic wind tunnel as the foundation of NAL, Bangalore. This '4ft Mach 4 tunnel' has accomplished numerous research and test programmes in support of Indian space, aeronautics and defence projects. As a prelude to this project, was responsible for the design, fabrication and operation of a 1ft transonic/supersonic tunnel as the first totally indigenous effort at NAL.

Rao, H Srinivasa*

Elected: 1934
Specialization: Zoology
Date and Place of Birth: 16 July 1894; Kanchipuram, Tamil Nadu
Parents: H Venkoba Rao
Last Address: 4/86, East Cross Road, No. 22, Katpadi Extension, P. O. Katpadi, North Arcot District, Tamil Nadu, India
***Deceased:** 14 July 1971

Education: Univ. of Madras: BA Hons 18, MA 20, DSc 25.

Career: Presidency College, Madras: Demonstrator in Zoology 18–20; Univ. of Calcutta: Lecturer in Zoology 20–22; Zoological Survey of India: Res. Asst 22–24, Asst Superintendent 24–44; Ministry of Agri. Govt of India: Dy Fish Development Adviser 45–46; Central Marine Fisheries Res. Station, Madras: Chief Res. Offr 47–50.

Scientific Work: Has contributed a number of original papers on the morphology, taxonomy and development of various groups of animals such as Porifera, Coelenterata, Mollusca and Pisces.

Memberships: Fellow: INSA 37 • President: Zoology Section of Indian Science Congress.

Rao, K Ananda*

Elected: 1934
Specialization: Summability of Series; Functions of the Complex Variable; Theory of Numbers
Date of Birth: 21 September 1893
Parent: C Krishnaswamy Rau
Children: four *d*
Last Address: 29, Boag Road, T Nagar, Madras, India
***Deceased:** 22 January 1966

Education: Madras Univ.: BA Hons 14; Univ. of Cambridge: Maths Tripos 15.

Career: Madras Presidency College, Madras, Dept of Maths: Prof. 19–48.

Scientific Work: Corrected a statement of Hardy relating to Tauberian condition for the Riesz typical method and published a proof for one of Littlewood's assertions made without proof. Proved concise theorems on abscissa of summability of Dirichlet series. Obtained factorization of (s–1) eta (s) using Cauchy's theorem on residues which inspired similar factorizations of Dirichlet L-functions. Studied the boundary behaviour of elliptic modular functions. In the theory of numbers, considered the representation of numbers as sums of even number of squares. Results significantly supplemented earlier results of Kloosterman.

Memberships: Fellow: INSA 35.

Awards & Distinctions: Rao Bahadur 37.

Rao, Kokarachedu Nagabhushana*

Elected: 1961
Specialization: Mathematical Physics; Meteorology; Hydrology; Geomagnetism
Date of Birth: 13 September 1913
Last Address: 23/1, First floor, 7th Main Road, Saraswathipuram, Mysore 570 009, India
***Deceased:** 1 January 1991

Education: Univ. of Mysore: BSc, MSc 37.

Career: IISc, Bangalore: Res. Asst 37–39; India Meteorological Dept: Dir 39–71; Regional Meteorological Centre, Bombay: Dir; Colaba and Alibag Geomagnetic Observatories: Dy Dir General of Climatology and Geophysics.

Scientific Work: Early scientific work in IMD was in the area of atmospheric thermodynamics. Scientific interests during later years were in the fields of climatology, hydrometeorology, meteorological statistics and long-range weather forecasting. Well-known contribution relates to the hydrometeorology of the Damodar river catchment. Was also associated with the publication of the revised edition of the *Climatological Atlas of India* including rainfall maps for the country. Had indepth knowledge of statistical techniques applied in meteorological studies. Was fascinated by the various facts of Indian rainfall with its intra-seasonal and inter-annual variablities and had a mastery of the relevant facts and figures.

Rao, Kandula Pampapathi*

Elected: 1971
Specialization: Zoology – Poikilotherms; Arthropods
Date of Birth: 9 March 1930
Parents: Kandula Jagga Rao and Lakshmi Narasayamma
Spouse and Children: Srilakshmi Devi; two s
Last Address: Department of Zoology, Bangalore University, Bangalore 560 001, India
***Deceased:** 23 June 1973

Education: Univ. of Madras: MA 48, PhD 51.

Career: Univ. of California, USA: Fulbright and Smith Mundt Res. Sci. 51–53, Vis. Prof. 65–66, 66–67; Andhra Univ., Waltair, Dept of Zoology: Lecturer 53–55, Reader 55–58, Prof. and Head 58–63; Univ. Colleges: Principal and Sri Venkateshwara Univ., Tirupati: Dean and Member of Syndicate 63–65; Bangalore Univ.: Prof. and Head 67–73.

Scientific Work: Early contributions on the Enteropneusta are very important. Later made distinct contributions to the understanding of the mechanisms of ciliary physiology and intertidal rhythms of growth, etc. Has established an active school on the physiology and metabolism of poikilotherms. Work resulted in the comprehension of the basic biochemical correlates of temperature adaptations. Studied the role of sterols and lipids in the activities of the nervous system and also the rhythmic, spontaneous and evoked activities of the central nervous system in the invertebrates and specially in the arachnids.

Rao, Kotcherlakota Rangadhama*

Elected: 1935, 1957
Specialization: Molecular Spectroscopy
Date of Birth: 1898
***Deceased:** 1970

Education: Univ. of Madras: MA 24, DSc; Univ. of London: DSc 30.

Career: Maharaja's College, Research Lab. Andhra Univ.: Lecturer 32–34, Reader 34–41, Prof. 41–49, Principal 49; Emeritus Prof.

Scientific Work: Starting research from simple atoms, proceeded to ionized atoms using different experimental techniques for various types of excitations using different spectrographs, glass, quartz, and finally vacuum UV spectrographs to range the spectral investigations from photographic infrared to the vacuum UV. Developed a diatomic molecular spectroscopy laboratory initially aimed at a high resolution vibrational structure in electronic transitions and then proceeded to high resolution rotational structural investigations in diatomic mole cules. In dielectrics, constructed microwave test benches. In radio frequency spectroscopy, constructed various electronic accessories and designed different systems and cells.

Awards & Distinctions: Madras Univ. Fellowship.

Rao, Kalya Jagannatha

Elected: 1983
Position: Hon. Prof., IISc, Bangalore
Specialization: Physical Chemistry of Amorphous Solids; Ceramics and Phase Transitions
Date and Place of Birth: 7 December 1940; Kalya, Karnataka
Parents: K B A Murthy and Nagamma
Spouse and Children: Sudha; one s
Address: Solid State & Structural Chemistry Unit, Materials Research Centre, Indian Institute of Science, Bangalore 560012, India
Tel. (080) 2360 2897, (080) 2293 2583 (O), (080) 2341 1129 (R), Mobile: 99801 55726
email: kjrao@sscu.iisc.ernet.in, kalyajrao@yahoo.co.in

Education: Mysore Univ.: BSc Hons 60, MSc 61; IIT Kanpur: PhD 67, Postdoc Res. 72; IISc, Bangalore: DSc 88.

Career: National College, Bangalore: Lecturer in Chem 61–64; IIT Kanpur: Res. Scholar and Teaching Asst 64–65, Sr Res. Fellow of Natl Bureau of Standards (USA) 65–67, Res. Assoc. 67–68; Purdue Univ., USA: Postdoc Res. Assoc. 68–71; Case Western Reserve Univ., USA: Postdoc Res. Assoc. 71–72; NAL, Bangalore: Sci. 72–78; IISc, Bangalore: Asst Prof., Assoc. Prof. and Prof. 78.

Scientific Work: Investigated a variety of glasses and amorphous solids and contributed to the understanding of their structures and stability, particularly the phenomenon of glass transition. Studied a number of zirconia-toughened ceramics and ceramics based on silicon nitride. Fast ion transport in glasses, molecular dynamics simulation and solid state MAS NMR are the other important areas of interest. Currently a new strategy for preparation and consolidation of advanced technology using microwaves is being investigated in the laboratory.

Memberships: Fellow: INSA 86; NASI 94.

Awards & Distinctions: S S Bhatnagar Prize 84 • Shanti Ranjan Palit Award 93 • MRSI Medal in Materials Science 95 • INSA Prize for Materials Science • IISc Alumni Award for Excellence in Research 2000 • Gold Medal for Research, the Univ. of Bordeauxl, France 2000 • CRSI Silver Medal for Extensive and Outstanding Research in Chemistry 2001 • MRSI Distinguished Materials Scientist of the Year 2002 • ISCAS Gold Medal Lifetime Achievement Award 2005 • Officer des Palmes Academiques (Offr of the Order of the Academic Palms) 2006 • KSCST Sir M Visweswaraiah Award for Lifetime achievement in Chemical Sciences 2007.

Rao, Kanury Venkata Subba

Elected: 1993
Position: Sr Sci. & Head, Immunology group, ICGEB, New Delhi
Specialization: Synthetic Peptides; Intracellular Signalling; Transcriptional Regulation
Date and Place of Birth: 27 September 1958; Lucknow, Uttar Pradesh
Parents: Kanury Rama Krishna Rao
Spouse and Children: Indu; one *s*, one *d*
Address: Immunology Group, International Centre for Genetic,
Engineering & Biotechnology, Aruna Asaf Ali Marg, New Delhi 110 067, India
Tel. (011) 2667 1680 (O), (0124) 636 7332 (R), Mobile: 98106 27255
email: kanury@icgeb.res.in

Education: Poona Univ.: BSc 77, MSc 79; MS Univ., Baroda: PhD 83.

Career: Johns Hopkins Univ., USA, Dept of Environmental Chem.: Res. Assoc. 83–85; Univ. of California, USA: Res. Assoc. 85–88; Intl Centre for Genetic Engg and Biotechnol., New Delhi, Virology Group: Res. Sci. 88–90, Asst Sci. 91–94, Sci–, Sr Sci–.

Scientific Work: Reconstructed, along with others, a synthetic peptide mimetic of a conformational group-specific determinant on the envelope antigen of hepatitis B virus. Mapping studies to localize the epitope identified it as a novel one which is nevertheless immunodominant in the context of human immune recognition. Subsequently they also developed a methodology that induces macromolecular aggregation of such peptides which renders them immunogenic in conjunction with adjuvants permissible for human use. Presently exploring the feasibility of developing multi-epitope immunogens for use as potential vaccines. The first phase of these studies have elucidated the molecular mechanism underlying the phenomenon of selective B cell recognition of epitopes on multi-determinant antigens. Developed an interleukin-1 derived peptide co-adjuvant that potentiates humoral responses against vaccines. Developed peptide-based immunodiagnostic kit for detection of HIV-1 and HIV-2 infections.

Important Publications: **(1)** The primary antibody repertoire represents a linked network of degenerate antigen-specificities (2002) *J. Immunol.* **169**, 888–897. **(2)** A GPI-linked isoform of the IgD receptor regulates resting B cell activation (2002) *Nature Immunology* **3**, 951– 957. **(3)** The strength of receptor signalling is centrally controlled through a cooperative loop between calcium and an oxidant signal (2005) *Cell* **121**, 281–293. **(4)** Transcription regulation from a TATA and Inr-less promoter: Spatial segregation of promoter function (2006) *EMBO J.* **25**, 811–821. **(5)** Capturing cell-fate decisions from the molecular signatures of a receptor-dependent signalling response (2007) *Mol. Systems Biol.* **3**, 150.

Memberships: Fellow: NASI 94; INSA 2000.

Awards & Distinctions: NII Sr Sci. Award 94.

Rao, Kaza Kesava

Elected: 1992
Position: Prof., IISc, Bangalore
Specialization: Flow of Granular Materials; Defluoridation of Drinking Water
Date and Place of Birth: 12 April 1956; Visakhapatnam, Andhra Pradesh
Parents: K Krishna Murthy and K Prasunamba
Spouse and Children: K Rathna Mani; two *d* (Parinitha, Nischita)
Address: Department of Chemical Engineering, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2293 2341 (O), (080) 2341 2695 (R)
email: kesava@chemeng.iisc.ernet.in

Education: IIT Madras: BTech 77; Univ. of Houston, USA: MS 79, PhD 82.

Career: Princeton Univ., USA: Postdoc Fellow 82–83; IISc, Bangalore: Asst Prof. 83–89, Assoc. Prof. 89–95, Prof. 95–.

Scientific Work: Frictional and frictional-kinetic models were developed for the flow of granular materials through hoppers, bunkers, and vertical channels. Model predictions were in accord with some of the experimental observations. A colorimeter costing about Rs. 300 was developed for measuring the concentration $c_{\cdot}$ of the flouride ion in drinking water. It was found that a solar still could be used for defluoridation of drinking water, provided the value of $c_{\cdot}$ in the feed was 5 mg/L or less. Surprisingly, measurable concentration of fluoride and other anions and cations were found in the distillate.

Important Publications: **(1)** The rate of discharge of coarse granular materials from wedge-shaped mass flow hoppers (1982) *Powder Technol.* **33**, 223–237. **(2)** Steady compressible flow of cohesionless granular materials through a wedge-shaped bunker (1991) *J. Fluid Mech.* **225**, 21–80. **(3)** A frictional Cosserat model for the slow shearing of granular materials (2002) *J. Fluid Mech.* **457**, 377–409. **(4)** Silo music: Sound emission during the flow of granular materials through tubes (2006) *Powder Technol.* **167**, 55–71. **(5)** *An introduction to granular flow* (2008) Cambridge University Press.

Memberships: Indian Institute of Chemical Engineers.

Rao, Keshaviah Aswath Narain*

Elected: 1936
Last Address: Government Industrial and Testing Laboratory, Bangalore, India
***Deceased**

Education: Univ. of London, UK: DSc, FIC.

Career: Government Industrial and Testing Laboratory, Bangalore: Superindendent; Annamalai University; Imperial Inst. of Sugar Technology, Cawnpora.

Important Publications: (1) *JCS* (1929) 1954. (2) *JCS* (1930) 1162. (3) *J. IISc* (1935) A18, VIII. (4) *J. IISc* (1934) A17, VIII.

Rao, Krishnarao Raghavendra*

Elected: 1986
Specialization: Neutron Spectroscopy; Phonon Physics; Neutron Beam Instrumentation
Date and Place of Birth: 7 May 1936; Bangalore
Parents: R R Krishna and R K Gopi Bai
Spouse: Soni
Last Address: Gokula, 29/2 11th Cross, Third Main, Malleswaram, Bangalore 560 003
***Deceased:** 2 December 2008

Education: Mysore Univ.: BSc 55; BHU, Varanasi: MSc 57, PhD 69.

Career: Atomic Energy Establishment, Bombay: Res. Assoc. 58, Sci. Offr (BARC) 58–96, Head of Solid State Phys. Dn 90–96; Chalk River, Canada: Colombo Plan Fellow 60–62; Natl Res. Council and Natl Acad. of Sci., USA, US Army Materials and Mechanics Res. Centre, USA: Postdoc Resident Res. Assoc. 70–72; Bangladesh and Korea: IAEA Expert in Neutron Scattering; Assoc. Editor: *Curr. Sci.* 97–2008.

Scientific Work: Carried out experimental studies of lattice dynamics of a variety of materials like Pb, Zn, Mg, KNO_3, Sb S , Mg SiO_4, Fe SiO_4, $C_2(CN)_4$ and others and of dynamics of liquids like A, CH_4 CCl_4, CD_4 by inelastic neutron scattering techniques. Also carried out theoretical investigations of a number of complex ionic materials by lattice dynamics approach and computer simulation. Experimental works include first observation of double Bragg scattering in neutron diffraction, first observation of Kohn anomaly in lead and detailed measurements of scattering and thereby space time distribution of atoms in liquid argon. Contributions to study of ionic 'molecular' systems is the most comprehensive one based on Venkataraman–Sahni formalism leading to planning experiments and development of software DISPR and MOLDYN for data analysis, interpretation and prediction.

Memberships: Fellow: INSA 89 • Member: Indian Sc. Congress; Indian Radiation Phys. Soc.

Rao, L Narayana*

Elected: 1944
Last Address: Jaya Nivas, Gavipuram Extension, Bangalore 560 019, India
***Deceased:** October 1973

Education: MSc, PhD.

Career: Central College, Bangalore: Prof. of Botany.

Rao, M Anant Narayana*

Elected: 1939
Specialization: Parasitology
Last Address: Madras Veterinary College, Madras, India
***Deceased**

Education: Presidency College, Madras; Veterinary College, Madras: Graduation 10; School of Hygiene and Tropical Medicine, UK: Post Graduate 29–30.

Career: Veterinary Asst Surgeon, Coorg 11–15; Madras Veterinary College: Lecturer in Parasitology 15–18, District Veterinary Offr, Lecturer in Parasitology 30.

Memberships: Fellow: Royal Soc. of Tropical Medicine and Hygiene 30.

Awards & Distinctions: Title of Rao Sahib 37.

Rao, Madhavarao Ranibennur Raghavendra*

Elected: 1978
Specialization: Biochemistry – Enzymology; Metabolism; Fermentation Biochemistry
Date and Place of Birth: 25 May 1924; Honnali Mysore, Karnataka
Parents: B R Madhava Rao and Indira
Spouse: Yamuna Bai
Last Address: Sree, 409, 12th Main Road, Saraswathipuram, Mysore 570 009, India
***Deceased:** 9 June 1992

Education: Univ. of Mysore: BSc Hons 44; IISc, Bangalore: AIISc 48; Univ. of Bombay: MSc 50; Univ. of Illinois: PhD 55.

Career: Joseph E Seagram & Sons, Inc., Distillers, USA: Intl Fellow 51–52; Central Drug Res. Inst., Lucknow: Jr Sci. Offr 55–57; NCL, Poona: Sr Sci. Offr 57–69; Kyoto Univ., Japan: Rockefeller Fellow in Med. Chemistry 63–64; Univ. of Illinois, USA: Res. Assoc. in Biochem. 64–65; Central Food Technological Res. Inst., Mysore: Head of Biochem. and Applied Nutrition 69–84.

Scientific Work: The specific aspects of interest are enzymes of significance in the food industry (such as amylases, pectinases, proteases, rice bran lipase), regulatory enzymes and regulation of the biosynthesis of lysine and threonine in bacteria (*Serratia marcescens* and *Micrococcus glutamicus*) and in germinating legumes (*Cicer arietinum, Phaseolus mungo*, etc.), citric acid fermentation and the isolation of citric acid from cotton leaves, microbial metabolism of branched C-4 and C-5 dicarboxylic and C-6-tricarboxylic acids, and recently the carbohydrates of oil seeds (before and after processing) and metabolism of rice proteins.

Memberships: President: Soc. of Biological Chemists.

Awards & Distinctions: M Sreenivasaya Award.

Rao, Mattegunta Venkata Radhakrishna*

Elected: 1950
Specialization: Pathology; Nutrition
Date and Place of Birth: 1 November 1903; Guntur Dist, Andhra Pradesh
Last Address: 2, Chandrajyoti, Bhimani Street, Matunga, Bombay 400 019, India
***Deceased:** 26 October 1971

Education: Medical College, Vizakapatnam: MBBS; Andhra Univ.: PhD 35.

Career: Nutrition Res. Laboratories, Coonoor: Res. Staff 35–41; Haffkine Inst., Bombay, Dept of Nutrition and Experimental Pathology: Asst Dir and Head 41–47; Govt of Bombay: Nutrition Expert and Head of Dept of Nutrition 48.

Scientific Work: Worked on the diseases of the liver in children and on human nutrition. Worked on the skin manifestations in Vitamin A deficiency.

Memberships: Member: WHO Expert Advisory Panel on Nutrition; Pathological Soc. of Great Britain and Ireland 40; Nutrition Soc. of Great Britain • President: Medical and Veterinary Science Section; Indian Sci. Congress • Fellow: INSA 45.

Rao, Maddali Nageswara

Elected: 1982
Specialization: Solar System Physics; Earth and Planetary Sciences; Lunar and Meteorite Sample Studies; Water on Mars
Date and Place of Birth: 11 July 1931; Bapatla, Andhra Pradesh
Parents: Narayana and Sitamma
Spouse and Children: Sita Devi; one *s*, two *d* (Venkatprasad, Radha, Subha)
Address: 16931, Tower Ridge, Friendswood, Texas 77546, USA
Tel. 281 993 9191 (R)
email: sitarao@sbcglobal.net

Education: Andhra Univ.: BSc Hons 52, MSc 53; Univ. of Koln, Germany: Dr. rer Nat 62.

Career: TIFR, Bombay: 68; Univ. of Arkansas, USA: Res. Asst Prof. 64–68; Univ. of Mainz, Germany: Alexander von Humboldt Fellow 58–63; PRL, Ahmedabad: Assoc. Prof., Prof. up to 92; NASA Johnson Space Centre, USA: Res. Sci. 92–2009.

Scientific Work: Significant contributions to our understanding of formative and evolutionary stages of solar system based on subtle clues provided by noble gas components in meteorites and in lunar materials. Established evidence for solar produced Xe and Ne isotopes in lunar surface materials, providing a new method for studying evolution of lunar regolith. Detection of Mars soil in martian metorites, water on Mars.

Important Publications: **(1)** The nature of martian fluids (2008) *J. Geophys. Res.* **113**, E06002. **(2)** Clues to martian brines (2005) *J. Geophys. Res.* **110**, E12s016. **(3)** Martian soil component (1999) *Geophys. Res. Lett.* **26**, 3265. **(4)** Determination of solar proton flux (1994) *Geochim. Cosmochim. Acta* **58**, 4231. **(5)** Mass yields distribution in fission (1966) *Science* **153**, 633.

Memberships: Fellow-Assoc.: National Research Council; US Natl Acad. of Sci.; Sigma Xi, Meteoritical Soc.

Rao, Manchanahalli Rangaswamy Satyanarayana

Elected: 1988
Position: President, JNCASR, Bangalore
Specialization: Molecular Biology; Cell Biology; Human Molecular Genetics
Date and Place of Birth: 21 January 1948; Mysore, Karnataka
Parents: M V Rangaswamy and M R Nagaratna
Spouse and Children: Padma; two s
Address: Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur, Bangalore 560 064, India
Tel. (080) 2208 2759, (080) 2362 2518 (O), (080) 23419380 (R)
email: mrsrao@jncasr.ac.in, mrsrao@biochem.iisc.ernet.in

Education: Bangalore Univ.: BSc 66, MSc 68; IISc: PhD 73.

Career: Baylor College of Medicine: Res. Assoc. 74–75, Instructor 75–76, Asst Prof. 76–78; IISc: Sr Res. Fellow 78–82, Asst Prof. 82–87, Assoc. Prof. 87–91, Prof. 91–2003; Centre for Genetic Engg: Chmn 90–93, JNCASR Bangalore: Vis. Asst Prof. 83, Res. Assoc. Prof. 86, President 2003–; Harvard Med. School: Vis. Prof. 93; Dept of Biochemistry: Chmn 98–2003, Astra Prof. 2001–03; BOG IISER, Trivandrum: Chmn.

Scientific Work: Studied the influence of testis-specific histones on chromatin structure of meiotic chromosomes in great detail. Discovered a germ-cell-specific lamin, which is highly conserved through evolution. Identified and characterized the meiotic DNA repair sites.

Memberships: Fellow: INSA 92; NASI 92; TWAS 2002 • Member: TWAS Prize Committee for Biology; Guha Res. Conf. Indo-Brazil Science Council & Indo-Japan Sc. Council • President: JNCASR.

Awards & Distinctions: Sarma Memorial Award • S S Bhatnagar Prize 88 • INSA Research Fellowship 88–90 • Rockefeller Biotechnology Career Fellowship 88–90 • Platinum Jubilee Lecture of ISCA 91 • Eleanor Roosevelt Fellowship of American Cancer Soc. 93 • Ranbaxy Science Foundation Award for Basic Medical Science • Jawaharlal Nehru Birth Centenary Lecture of INSA 2000 • J C Bose Medal • Sir Mellanby Memorial Lecture of CDRI, Lucknow 2002 • O P Bhasin Award for Biotechnology • Prof. J Das Memorial Lecture, Indian Soc. of Cell Biology • FICCI Award • J C Bose National Fellowship • Sir M Viseveswaraih Sr Scientists State Award • Dr. B R Ambedkar Centenary Award • TWAS Medal Lecture.

Rao, Mandagere Bharadwaj Ramachandra*

Elected: 1957
Specialization: Geology; Exploration Geophysics
Date and Place of Birth: 5 August 1906; Mandagere, Mandya Dist., Karnataka
Parents: Mandagere Byrappa Bharadwaj and Venkamma
Spouse: Sarada
Last Address: 669, Third Block, Rajajinagar, Bangalore 560 010, India
***Deceased:** 4 September 1992

Education: Univ. of Mysore: BSc 28, MSc 33.

Career: Mysore Geological Dept: Asst Geologist 28–37, Geophys. Trg 37–38, Geologist & Geophysicist 38–44, on deputation to Madras Presidency 44–49; GSI: Chief Geophysicist 49–57; Oil and Natural Gas Commission, Dehra Dun: Dir of Geophysics 57–59, Adviser 69–71.

Scientific Work: Carried out geological and geophysical exploration for sulphide ores, graphite, groundwater, etc. Carried out engineering investigations for dams, tunnels, hydroelectric projects, etc. Systematic geophysical exploration for manganese, copper, etc., was initiated in areas as widely separated as Singhbhum, Khetri and Chitradurga. More importantly, exploration for oil in the Cambay and Cauvery basins was undertaken. A vast programme of magnetic gravity and seismic surveys was initiated in the sedimentary basins of hydrocarbon interest. One such area was the Cambay basin where on drilling despite much scepticism and debate it led to the discovery of the Cambay field in 1959.

Memberships: Fellow: Indian Geophysical Union • President: Assn of Exploration Geophysicists.

Awards & Distinctions: Padma Bhushan 72.

Rao, Mandikal Ramanna Aswathanarayana*

Elected: 1956
Specialization: Physical and Inorganic Chemistry
Date and Place of Birth: 7 November 1910; Gowribidanur, Karnataka
Parents: M Ramanna and Lakshminarasamma
Spouse and Children: Saraswathamma; one *s*, three *d*
Last Address: No. 446, 4th Main Road, HMT Layout, Anandanagar, Bangalore 560 032, India
***Deceased:** 24 May 1992

Education: Univ. of Mysore: BSc 30, MSc 33; Univ. of Madras: DSc 41.

Career: Univ. of Mysore: Res. Scholar in Chem. 30–33; Central College, Bangalore: Lecturer in Chem. 35–44; IISc, Bangalore: Res. Scholar 34–35, Lecturer in Gen. Chem. 45–56, Asst. Prof. 57–60, Prof. of Physical Chem. 60–71, UGC Prof. 71–73, Editor of Current Science 74–88.

Scientific Work: Early work concerned with the synthesis and characterization of unstable iodides such as sulphur monoiodine, thionyl iodide and sulphuryl iodide. Also studied the reactions of many sulphur compounds in non-aqueous solvents and developed analytical methods for the estimation of the elemental sulphur. In this task, excellent abilities as a glass blower came in handy to fabricate intricate glass and quartz apparatus required for his work. Later interest was in colloid chemistry, electrochemical preparation of several inorganic compounds such as sodium hydrosulphite and beneficiation of inorganic minerals. The adsorption of argon, nitrogen, oxygen, hydrogen and carbon monoxide on iron supported on Kieselguhr and iron powders derived from the decomposition of iron pentacarbonyl was investigated. Detailed kinetic and mechanistic studies were carried out to gain an insight into the nature of adsorbed species. Other research programmes undertaken included direct chlorination of rubber latex by emulsifying it with CCl_4 at room temperature, determination of the spreading properties of natural rubber and its derivatives and light scattering and viscometric measurements on poly(vinyl chloride), poly(methacrylate) and their copolymers to determine their size and shape as well as solvent effects on the properties of these polymers.

Memberships: Fellow: Royal Soc. of Chemistry, London 51.

Rao, Nanduri Venkata Subba*

Elected: 1958
Specialization: Natural Products Chemistry
Date of Birth: 8 November 1916
Last Address: Department of Chemistry, University College of Science, Osmania University,
Hyderabad 500 007, India
***Deceased:** 1976

Education: BSc Hons, MSc Hons; Andhra Univ., Waltair: DSc; Univ. of London, UK: PhD.

Career: Osmania Univ., Hyderabad Dept of Chem.: Prof. and Head.

Scientific Work: Significant contributions were in the chemistry of natural products; synthesis of aromatic and heterocyclic compounds likely to be of value as insecticides, fungicides and bactericides; and mode of formation of heterocyclic nitrogen rings.

Memberships: Fellow: Royal Inst. of Chemistry, London; Chemical Soc. London; Indian Chemical Soc.; INSA.

Rao, Palle Rama

Elected: 1978
Position: ISRO Brahm Prakash Distinguished Prof.
Specialization: Deformation; Fracture; Materials Development
Date and Place of Birth: 30 June 1937; Kurnool, Andhra Pradesh
Parents: P Kesava Rao and P Kaveriamma
Spouse and Children: Rekha; one *s*, one *d*
Address: IARC for Powder Metallurgy & New Materials (ARCI), Hyderabad 500 005, India
Tel. (040) 2444 3167 (O), (040) 6661 4475 (R), Mobile: 98497 65123
email: pallerama_rao@yahoo.co.in

Education: Madras Univ.: BSc Hons 56, MA 57; Andhra Univ.: MSc 57; BHU, Varanasi: PhD 64.

Career: IISc, Bangalore, Dept of Metallurgy: Res. Fellow 57–60, Sr Res. Asst 60–62; BHU, Varanasi, Dept of Metallurgical Engg: Lecturer 62–67, Reader 67–75, Prof. 75–82; Defence Metallurgical Res. Lab., Hyderabad: Dir 82–91; Govt of India, Dept of Sci. and Technol.: Secretary 91–95; Govt of India, Dept of Ocean Development: Secretary 92–95; Atomic Energy Regulator Board, Mumbai: Chmn 96–99; Univ. of Hydeabad: Vice-Chancellor 99–2002; Inst. Centre for Powder Metallurgy, Hyderabad: ISRO Brahm Prakash Disting Prof. 2002–07; Governing Council, IARC for Powder Metallurgy & New Materials, Hyderabad: Chmn.

Scientific Work: Contributions in X-ray diffraction study of structural imperfections include development of new methods of analysis of X-ray line-broadening and prediction and experimental verification of fault configurations in double hexagonal close-packed crystals. With regard to correlation of mechanical behaviour with microstructures work relates to high strain fatigue at ambient and elevated temperatures, creep at low (mass transport controlled) and intermediate (dislocation climb controlled) stresses, creep fracture and the effect of thermomechanically-induced substructure on dynamic strain ageing and fracture characteristics of titanium and its alloys. A major recent research programme addressed the basic issue of fracture toughness in single phase and dilute alloys leading to development and application of speciality structural steels. Current work is aimed at understanding the role of solute elements in formability of magnesium alloys.

Important Publications: **(1)** First report on observation of abnormal creep in a Zr-2.5 wt% Nb alloy at low stresses (2009) *J. Mater. Sci.* **44**, 2247. **(2)** Influence of cerium on texture and ductility of magnesium extrusions (2008) *Scripta Materialia* **59**, 562. **(3)** Mixed mode I/III fracture toughness of Armco iron (1988) *Acta Materialia* **46**, 4985. **(4)** Influence of solute additions on the fracture behaviour of Armco iron; Analysis of ductile fracture initiation toughness in iron, its binary alloys and nickel (1994) *Proc. R. Soc. London* **447**, 223 & 237. **(5)** Creep of alpha titanium at low stresses (1981) *Acta Metallurgica* **29**, 1263.

Memberships: Fellow: INSA 80; INAE 87; NASI 90; TWAS 99 • President: Indian Inst. of Metals; MRSI; IASc; Intl Cong. on Fracture • Vice President: Intl Union of Materials Res. Soc.; Royal Acad. of Engg, UK; The Ukrainian National Acad. of Sci.

Awards & Distinctions: Kamani Gold Medal 70 • S S Bhatnagar Prize 79 • Homi J Bhabha Award 85 • VASVIK Award 86 • UGC Natl Lecturer 86 • INSA Materials Sci. Prize 89 • Padma Shri 89 • IISc Distinguished Alumnus Award 90 • Natl Citizen Award 90 • IIM Tata Gold Medal 92 • IIM Platinum Gold Medal 94 • IIM Platinum Medal 94 • MRSI Disting. Medallurgist 98 • GOI Natl Metallurgist 99 • ISCA Jawaharlal Nehru Birth Centenary Award 99 • Padma Bhushan 2001 • Indian Institute of Metals Lifetime Achievement Award 2009.

Rao, Paranandi Venkata Suryanarayana

Elected: 1974
Specialization: Computer Science and Speech Research; Natural Language Processing; Cursive Script Recognition
Date and Place of Birth: 17 July 1936; Berhampur, Orissa
Parents: Paranandi Venkata Suryanarayana and Rama Lakshmamma
Children: one *s*, one *d*
Address: Flat No. 601, Vigyan, Sector 17, Next to Garden, Vashi, Navi Mumbai 400 703, India
Tel. (022) 6661 5273 (O), Mobile: 92233 98325
email: dr.pvs.rao@tatatel.co.in

Education: Utkal Univ., Orissa: BSc 53; BHU, Varanasi: MSc 55; Bombay Univ.: PhD 61.

Career: TIFR, Bombay, Computer Group: Res. Asst 55–60, Res. Fellow 62–64, Fellow 64–68, Reader 68–72, Sr Res. Sci. 72–78, Project Dir 72–84, Speech and Digital Systems Group: Prof. & Head 78–83, CSC Group: Prof. & Head 80–90, Sr Prof. & Head 90–98; Univ. of Illinois, USA: Res. Asst 60–61, Res. Assoc. 61–62; TCS Ltd, Navi Mumbai: Adviser.

Scientific Work: Developed TIFRAC, India's first electronic computer, ILLIAC II of the Univ. of Illinois, and OLDAP, the first Indian computer. Brought to fruition, two major inter-organizational classified projects: Automatic data handling of air defence involving joint participation of a number of research and development and production organizations in the country; and an automatic electronic switch. Carried out research on speech synthesis and recognition.

Memberships: Fellow: INSA 83; INAE 87; NASI 91 • Member: Acoustical Soc. of India; IEEE, USA & India.

Awards & Distinctions: Vikram Sarabhai Award 76 • Om Prakash Bhasin Award 87 • VASVIK Award 87 • Padma Shri 87 • IEEE Millinium Metal 2000 • President: Computer Soc. of India.

Rao, Patcha Ramachandra

Elected: 1985
Position: Raja Ramanna Fellow, DAE, ARCI, Hyderabad
Specialization: Physical Metallurgy; Materials Science; Alloy Development
Date and Place of Birth: 21 March 1942; Kavutavaram, Andhra Pradesh
Parents: S R Narayanaswamy Naidu and Lakshmi Bai
Spouse and Children: Sudha; one *s*, one *d* (Animesh, Suparna)
Address: Plot No. A-288, Road No. 5, Green Park Colony, Karman Ghat, Hyderabad 500 079, India
Tel. (040) 3245 9330 (R), Mobile: 99661 55711
email: pramachandra_rao@yahoo.com, panmay_bera@yahoo.com

Education: Osmania Univ., Hyderabad: BSc 59, MSc 61; IISc, Bangalore: BE 63; BHU, Varanasi: MSc 65, PhD 68.

Career: BHU, Varanasi: Lecturer, Reader, Prof. in Metallurgy 64–92, Vice-Chancellor 2002–04; Natl Metallurgical Lab., Jamshedpur: Dir 92–2002; Defence Inst. of Adv. Technol: Dir, Vice-Chancellor 2005–07; ARCI, Hyderabad: Raja Ramanna Fellow 2007–.

Scientific Work: Established and developed basic research and technology in the field of rapid solidification of metals and alloys in India. Studied a large number of metastable alloys and elucidated the mechanisms of their formation. Discovered several new metastable phases including a new class of quasi-crystals. Contributed to the understanding of the thermodynamics of associated solutions and glasses. Research experience in the area of solidification of metal, thernodynamics of alloys and biomimetics.

Important Publications: **(1)** Free volume theories of the glass transition and the special case of metallic glasses (1977) *J. Mater. Sci.* 12, 2488–2502. **(2)** On the free energy change accompanying crystallisation of under-cooled melts (1984) *Acta Metallurgica* **32**, 91–96. **(3)** A basis for the synthesis of quasicrystals (1985) *Pramana – J. Phys.* **25**, L225–L230. **(4)** Studies on undercooled metallic metals (1997) *Prog. Mater. Sci.* **42**, 301–309. **(5)** Application of transformation diagrams to predict phase diagrams in alloys (2003) *Calphad*, **27**, 1, 39–56. **(6)** A chicken's egg as a reaction vessel to explore biomineralization (2007) *J. Bionic Eng.* **4**, 133–141.

Memberships: Member: Materials Res. Soc., India; Indian Sc. Congress Assn; Materials Res. Soc., USA • Fellow: INSA 85; INAE 90; TWAS 2003; NASI; Inst. of Materials, Minerals and Mining, London; Institution of Engineers, India; Maharashtra Acad. of Sci.; Indian Inst. of Metals.

Awards & Distinctions: National Metallurgists Day Award 79 • USSR Intercosmos Medal 84 • S S Bhatnagar Award 85 • Malaviya Memorial Trust Sr Academic Award 85 • INSA Prize for Material Science 97 • VASVIK Award 97 • Om Prakash Bhasin Award 98 • FICCI 99–2000 • MRSI–ICSC Superconductivity and Materials Science Prize 2002, 2005 • Natl Metallurgist Award 2004 • INSA S S Bhatnagar Gold Medal 2005.

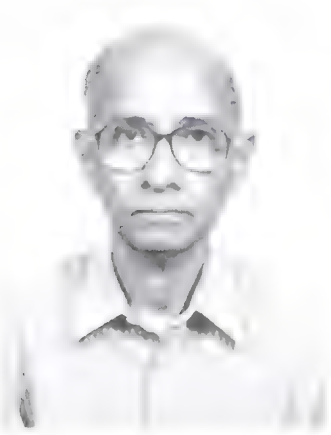
Rao, Pavagada Krishna*

Elected: 1939
Specialization: Human Pathology; Tropical Medicine
Date of Birth: 15 June 1899
Last Address: 349, First Block, Second Cross, Jayanagar, Bangalore 560 011, India
***Deceased:** 20 May 1978

Education: BSc; Univ. of Bombay: MBBS, DTM & H (England).

Career: Victoria Hospital, Bangalore: Pathologist, Medical Offr Supdt 51–55.

Rao, Pendyala Balarama



Elected: 1996
Position: Vis. Prof, NRSC, Dept of Space, Hyderabad
Specialization: Space Physics; Radiowave Propagation; Radar Systems
Date and Place of Birth: 15 February 1938; Manthena, Krishna Dt, Andhra Pradesh
Parents: Poornachandra Rao and Rajeswari
Spouse and Children: Prabhavati; two *s* (Vani Prasad, Ram Mohan)
Address: National Remote Sensing Centre, Department of Space,
PPEG, Building No. 10, Balanagar, Hyderabad 500 037, India
Tel. (040) 2388 4020 (O), (040) 2300 3888 (R), Mobile: 97015 39789
email: rao_pb@nrsa.gov.in, pbrao_nmrf@yahoo.co.in

Education: Andhra Univ.: BSc (Hons) 58, MSc 59, PhD 63.

Career: Andhra Univ.: JRF & SRF 60–64; Ohio State Univ., USA: Res. Assoc. 64–65; Cornell Univ., USA: Res. Assoc. 65–68; Raytheon Co., USA: Sr Sci. 68–76; Univ. of Kerala: Prof. 76–90; Dept of Space, NARL: Dir 90–98; Kyoto Univ.: Vis. Prof. 2000; Natl MST Radar Facility, Tirupati: Vis Prof 98–2002; NRSA Hyderabad: Emeritus Sci. 2002–.

Scientific Work: Using Thomson scatter radar at NAIC, Arecibo, ionospheric plasma densities and temperatures have been mapped for a low latitude. An RF scattering model has been developed for plasma irregularities generated by high power radiowave heating. An HF Doppler radar technique has been developed and successfully demonstrated for measuring ionospheric plasma drifts and electric fields over magnetic equator. A high resolution VHF phased array radar, referred to as MST radar, has been established at Gadanki and used to generate the first high resolution maps of vector winds, turbulence parameters and refractivity structure of the tropical atmosphere over India. Directing the radar beam transverse to the earth's magnetic field, the structure and dynamics of the low latitude inospheric plasma irregularities and the underlying plasma instability processes have been studied with unprecedented temporal and spatial resolutions. A new class of plasma waves were detected using Gadanki radar and these offer an excellent means to infer winds and electric fields in the collision dominated lower ionosphere.

Important Publications: **(1)** Electron densities and electron and ion temperatures in the F region for magnetically quiet and disturbed conditions (1968) *J. Geophys. Res.* **73**, 1661. **(2)** A model for RF scattering from field aligned heater induced irregularities (1974) *Radio Sci.* **9**, 987. **(3)** Radars for atmospheric sciences: MF/HF and MST radars (1990) *Ind. J. Radio Space Phys.* **19**, 326. **(4)** Indian MST radar-Part 1: System description and sample vector wind measurements in ST mode (1995) *Radio Sci.* **30**, 1125. **(5)** MU radar observations of km-scale waves in the midlatitude E region (2000) *Geophys. Res. Lett.* **27**, 3667.

Memberships: Vice-Chmn: ADCOS • Chmn: SAC-SPL; VSSC; CAWSES Natl Steering Comm. (Dept of Space).

Awards & Distinctions: Raytheon Distinguished Author Award 74 • National Space Science Symposium Award 90 • Asian Ocean & Geosciences Soc. (AOGS) Distinguished Lecture Award 2007.

Rao, Potukuchi Suryaprakasa*

Elected: 1943
Specialization: Organic Chemistry; Plant Biochemistry
Date and Place of Birth: 1 September 1914; Rajahmundry, Andhra Pradesh
Parents: P Subbaiah and Subbamma
Spouse and Children: Kanakadurga; three *s*, two *d*
Last Address: Sai Nilaya, Ganganagar Extension, Bangalore 560 032, India
***Deceased:** 9 January 2002

Education: Andhra Univ.: BSc Hons 35, MSc Hons 36, DSc 39.

Career: Andhra Univ., Waltair: Lecturer in Chem. 37–45; Forest Res. Inst., Dehra Dun, Chem. and Minor Forest Products Dept: Offr 46–56, Head 56–60; Forest Res. Lab., Bangalore: Dir 60–73; Indian Inst. of Horticulture Res.: ICAR Hon. Sci 73–75; Sathya Sai Inst. of Higher Learning, Bangalore: Hon. Prof. of Chem. 73.

Scientific Work: Engaged in chemical and utilizational studies of forest products like tamarind seed, katha and cutch, wild dioscorpeas, *Occimum*, camphor, teak leaf dye, etc. Tamarind kernel powder industry affords one of the finest examples of exploitation of forest product as a result of research. Later interests were on pigments of white flowers.

Important Publications: **(1)** *Industrial gums* (1959) Academic Press, USA. **(2)** *Some useful aromatic plants* (1966) Govt of India.

Memberships: Fellow: London Royal Inst. of Chem. 52; INSA 68; Indian Acad. of Wood Sci. 68; Indian Acad. of Horticultural Sci. 74.

Rao, Ramachandra Raghavendra

Elected: 2001
Position: CSIR Emeritus Sci., CIMAP, Bangalore
Specialization: Plant Taxonomy; Ethnobotany; Phytogeography; Biodiversity and Conservation
Date and Place of Birth: 22 September 1945; Shimoga, Karnataka
Parents: Ramachandra Rao and Indira Bai
Spouse and Children: Manorama; two *d* (Rajani, Pallavi)
Address: Central Institute of Medicinal and Aromatic Plants, Resource Centre Allalasandra, GKVK, P.O.
Bangalore 560 065, India
Tel. (080) 2856 5652 (O), (080) 2856 4291 (R), Mobile: 94488 52356
email: rr_rao@vsnl.net

Education: Univ. of Mysore: BSc 67, MSc 69, PhD 74.

Career: Univ. of Mysore: UGC Res. Fellow 69–73; Botanical Survey of India, Calcutta: Botanist 73–75; N E Hill Univ., Shillong: Lecturer 75–80, Reader, 80–82; Botanical Survey of India: Dy Dir 82–87, Joint Dir 88–91; NBRI, Lucknow: Dy Dir 91–96, Sci. in Dir Grade 96–2005; CIMAP, Bangalore: CSIR Emeritus Sci. 2005–.

Scientific Work: Has worked on taxonomic revision of *Aconitum, Berberis* and *Cichorieae* of Compositae. Has solved the taxonomic confusion of several species complexes in these groups. 20 new taxa have been described from these groups. Dichotomous keys, correct delimitation of taxa and their descriptions along with phytogeographical significance are discussed in these works. As part of conservation biology worked on reproductive biology of critically endangered *Eremostachys superba* of Doon valley. Highlighted for the first time, various bottlenecks in its fecundity. Based on first hand field knowledge of the Himalayan plants, realistically assessed the conservation status of many endangered taxa. Several critically rare species listed have entered the pages of *Red Data Book* of India. Extensive field work among tribal pockets in North East India has brought to light many little known or unknown claims of plants which await clinical experimentation for development of modern drugs.

Important Publications: **(1)** *A handbook of field and herbarium methods* (1980) Today and Tomorrow's Publishers, New Delhi. **(2)** *A synoptic flora of Mysore district* (1980) Today and Tomorrow's Publishers, New Delhi. **(3)** *Biodiversity in India* (1994). **(4)** Trends in the evolution of the angiosperm flower, essays in evolutionary plant biology (1992) *Paleobotany.* **41**, 167–175. **(5)** Diversity of Indian flora (1997) *Proc. Indian Natl Sci. Acad.* **B63**, 3, 127–138.

Memberships: Fellow: NASI 99; INSA 2004; Soc. of Ethnobotanists; Indian Botanical Soc.; Indian Assn of Angiosperm Taxonomy; Intl Soc. for Conservation of Natural Resources • President: Soc. of Ethnobotanists; Indian Botanical Soc. • Chmn: State level Environmental Appraisal Committee.

Awards & Distinctions: Pitamber Plant National Environment Fellow • William Harshbagar Medal • B A Razi Medal • Y D Tyagi Gold Medal Award • Talented Scientist Award, 35th World Congress on Natural Medicine • Scientist of the Year 2001, National Environmental Science Acad.

Rao, S Raghavender*

Elected: 1952
Specialization: Epidemiology
Last Address: A/9/316, Vithalwadi, Hyderabad-Deccan, India
***Deceased:** 1954

Education: Univ. of Hyderabad: LM & S 23; Univ. of Calcutta: DTM 32, DPH 34, DSc 41.

Career: Reserve Asst Surgeon, Aurangabad 23–24; Mental Hospital: Asst Medical Offr 24–28; Osmania Med. College: Asst Prof. of Physiology 28–30; Civil Hospital, Hyderabad: Asst Surgeon 30; Asst Plague Offr 30–37, Plague Offr 37, Asst Plague Offr 38–40; Civil Surgeon & Health Offr 41–42; Offr-in-Charge of Plague Survey 42–44; Epidemiologist-in-Charge 44–46; Govt of Hyderabad: Asst Dir of Public Health 46.

Scientific Work: Published papers on the plague in Bengal with special reference to Calcutta, epidemiology of plague, rat-fleas of Calcutta, guinea-worm disease, chemotherapy in cerebro-spinal fever, role of field rats in the endemnicity of plague in Nizam's dominions and role of Palkies (moving religious fairs) in the epidemiology of cholera.

Rao, Srinivasarao Srinivasa Moorthy*

Elected: 1934
Specialization: Electrical Engineering; Wireless Engineering
Date and Place of Birth: October 1899; Pallapalayam, Karur, Tamilnadu
Parents: V Srinivasa Rao and Lakshmamma
Spouse and Children: Rangamma; two *s* two *d* (Narayana, Krishna, Lakshmi, Radha)
Last Address: 341, 4th Main, Upper Palace Orchards, Sadashivanagar, Bangalore 560 080, India
***Deceased:** 5 May 1983

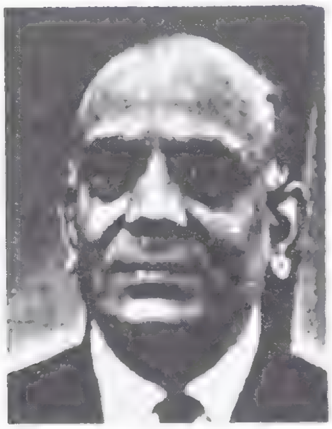
Education: Mysore Univ.: BE 22; IISc: Dip. Elecl Engg 24.

Career: P&T Dept: Asst Divl Engr 23, Divl Engr 27–36, i/c Wireless Trg & Res 36–40; Telegraph Storeyard, Alipur: Elecl Engr-in-Chief: 41–42; Telegraphs, Madras Circle: Dir 43–45; Carrier & Wireless, New Delhi: Dir 46–47; Telegraphs, New Delhi: Dy Dir Gen. 47–56; Int. Frequency Regn Board, Geneva: Mbr 52–54.

Scientific Work: Pioneering work in basic components such as capacitors and electronic circuits such as relaxation oscillators and gas discharge tubes. Invented the RC phase shift oscillator for pure sine waves which was patented in 1938, as well as 'secrephone' invaluable to the defence services during World War I. Other inventions include the development and manufacture of wireless equipment for P&T, such as components like LW tuning inductance, variometers, dustcore inductors, HT capacitors, dual frequency duplexers, and systems such as SW transmitters, mobile transceivers, carrier telegraphy equipment, etc. Also responsible for installing several communication links in India and also links between India and Lahore/Burma, the submarine cable between India and carrier telegraphy for Reuters.

Awards & Distinction: Rao Bahadur 45.

Rao, Shimoga Nadiga Gundu*



Elected: 1955
Specialization: Sugar Technology; Industrial Chemistry
Date and Place of Birth: 26 November 1909; Shimoga, Karnataka
Parents: S N Krishna Rao and Rukhmini
Spouse and Children: Chhaya Lakshmi; two *s*, two *d*
Last Address: Sharkara, No. 19, 18th Cross Road, Malleswaram, Bangalore 560 055, India
***Deceased:** 7 September 1985

Education: Univ. of Mysore: BSc 29; Harcourt Butler Technological Inst.: Assoc. 34.

Career: Mysore Sugar Company, Mandya: Sr Chemist 33–34; Imperial Inst. of Sugar Technol.: Tech. Asst 34–40; Ravalgaon Sugar Factory, Maharashtra: Chief Technologist 40–56; Natl Sugar Inst., Kanpur: Dir 56–63; British-India Corporation Group of Sugar Factories, East UP and North Bihar: Executive Dir and Technical Adviser 63–75; Deccan Sugar Inst.: Adviser/Dir 75–79.

Scientific Work: Initial contribution was to update the process technology and equipment and study the utilization of by-products. Set up modern plants for manufacture of sugar candy, sugarcane wax and confectionery plant. One of the offshoots of critical sense of quantitative assessment of process efficiency was the Gundu Rao formula for reduced boiling house recovery. Introduced many schemes for improving the working efficiency of sugar factories and the development of co-operative sector.

Memberships: Fellow: Royal Inst. of Chemistry, London; Indian Standards Inst.; Sugar Technologist Assn of India.

Awards & Distinctions: Noel Deer Gold Medal.

Rao, Srikantiah Subba*

Elected: 1934
Specialization: Medical Surgery
Date and Place of Birth: 18 June 1883; Mysore, Karnataka
Parents: M L Sreekantiah and Nanjamma
Spouse and Children: Venkatalakshamma, Parvathamma; six *s*, two *d*
Last Address: Satsuma, Visvesvarapuram, Bangalore, India
***Deceased:** 2 January 1955

Education: Univ. of Madras: BA 1902, MBBS 1907; Univ. of London, Royal College of Surgeons: MRCS (Dip.) 1910; Univ. of Cambridge: DPH 1910.

Career: Mysore Med. Service, K R Hospital: Asst Surgeon 12–18, Resident Med. Offr; Shimoga Hospital: District Medical Offr 18–20; Victoria Hospital, Bangalore; Med. Offr; Med. School and College, Bangalore: Principal and Prof. of Surgery 20–24; Govt of Mysore: Sr Surgeon 24–38.

Scientific Work: Lectures to students, while in the Medical School and College were published as a booklet in surgery. Papers such as 'Some aspects of Abdominal Surgery' and 'Voluminous Ovarian Experiments', were relevant contributions to surgical journals. Started and upgraded many hospitals in the State like the Mysore Medical College and Mental Hospital.

Memberships: Founder Member: Indian Assn of Surgeons; Mysore Industrial and Testing Lab. • President: Mysore Medical Assn.

Awards & Distinctions: Sastravaidya Pravina 33.

Rao, Subbarao Ramachandra*

Elected: 1934
Specialization: Magnetism
Date and Place of Birth: 15 May 1899; Mannargudi, Tamil Nadu
Parents: Subba Rao and Sita Bai
Spouse and Children: one *s*, one *d*
Last Address: Sri Venkateswara University, Tirupati, India
***Deceased:** 28 February 1983

Education: Univ. of Madras: BA Hons 20, MA 27; Univ. of London: PhD 30, DSc 37.

Career: American College, Madurai: Lecturer in Phys. 20–23; Sri Minakshi College, Chidambaram: Lecturer in Phys. 23–28; Indian Assn for Cultivation of Sci., Calcutta: 26–27; Kings College, London: 28–30; Annamalai Univ., Dept of Phys: Reader 30–34, Prof. 34–43; Central College, Univ. of Mysore: Prof. 43–54; Sri Venkateswara Univ., Tirupati: Prof. 55–63, Principal 60.

Scientific Work: Research work related to anisotropy of the polarization field in liquids by study of light scattering in liquids at high temperatures; comparative studies on soft X-ray emission and secondary electron emission from polycrystalline and single-crystal metal faces; magnetic properties of some elements and compounds in amorphous, colloidal, single-crystal and dissolved states.

Memberships: Fellow: Inst. of Physics, London; INSA 48 • President: Phys Sec. of Indian Sci. Congress 52.

Rao, Udipi Ramachandra

Elected: 1969
Position: Chmn, PRL Council, ISRO-DOS
Specialization: Cosmic Rays; Space Physics Technology and Applications; Avionics, Satellite and Rocket Technology and Applications; High Energy Astronomy
Date and Place of Birth: 10 March 1932; Admar, Karnataka
Parents: U Laxminarayan Rao and Krishnaveni Amma
Spouse and Children: Yashoda; one *s*, one *d* (Madan, Mala)
Address: 3367-E, 13th Main Road, HAL II Stage, Indiranagar, Bangalore 560 038;
Department of Space, Antariksh Bhavan, New BEL Road, Bangalore 560 231, India
Tel. (080) 2341 6406, (080) 2217 2387 (O), (080) 2526 9523 (R)
email: urrao_isro@hotmail.com, urrao@isro.org

Education: Univ. of Madras: BSc 51; BHU, Varanasi: MSc 53; Gujarat Univ.: PhD 60.

Career: Ahmednagar College: Lecturer in Phys. 53–54; St Philomena's College, Mysore: Lecturer 54, Asst Prof. 64–65; MIT: Postdoc Fellow 61–63; Univ. of Texas, Dallas: Asst Prof. 63–64; PRL, Ahmedabad: Res. Fellow 54–61, Asst Prof. 67–70, Prof. 70–71; ISRO Scientific Satellite Project, Bangalore: Dir 72–76; ISRO Satellite Centre, Bangalore: Dir 76–84; ISRO & Secretary, Dept of Space: Chmn 84–94; Vikram Sarabhai Distinguished Prof. 94–99; United Nations Committee on Peaceful Uses of Outer Space (UN-COPUOS), Vienna: Chmn 97–2000.

Scientific Work: In his early career, did important work in cosmic rays, solar wind and magnetic fields and energetic particles in interplanetary space. Made important contributions to high count neutron monitors, instrumentation for cosmic ray studies in pioneer and IMP satellites and analysis of satellite data for determining the anisotopes of cosmic rays and directions of interplanetary magnetic field. Besides contributing to the understanding of the interplanetary physics and high energy astronomy, responsible for establishing satellite technology in India. Under his leadership, starting with Aryabhatta, India's first satellite, 20 satellites including INSAT 1 & 2 series of geostationary satellites which initiated total communication revolution in India and IRS series of remote sensing satellites were built and launched. Responsible for the development of ASLV and PSLV launch vehicles, besides actively promoting extensive application of space technology for communication, broadcasting, education, disaster management and management of natural resources.

Important Publications: **(1)** *Perspectives in communications* (1987) World Scientific Pub. Co. Pvt. Ltd. **(2)** *Space and agenda 21 Caring for Planet Earth* (1995) Prism Books Pvt Ltd, Bangalore. **(3)** *Space technology for sustainable development* (1996) Tata McGraw Hill Pub., New Delhi. **(4)** *Contribution of changing galactic cosmic ray flux* *to global warming* (2007). **(5)** *Space remote sensing for sustainable improvement of carrying capacity in developing countries* (1998) Space Forum. **(6)** INSAT initiates communication revolution in India (2008) AIAA Books, USA.

Memberships: Fellow: World, Acad. of Arts & Sci. USA; INSA 80; IETE 85; INAE 87; NASI 88; TWAS 94; Intl Acad. of Astronautics; Astronautical Soc. of India; Aeronautical Soc.; Indian National Cartographic Assn; Broadcasting & Engineering Soc. of India; Indian Aero-Medical Soc. • Distinguished Fellow: PRL.

Awards & Distinctions: Karnataka Rajyothsava Award 75 • Hari Om Vikram Sarabhai Award 75 • S S Bhatnagar Award 75 • Padma Bhushan 76 • VASVIK Award 80 • Mahalanobis Medal 87 • Yuri Gagarin Medal 91 • Allan D Emil Memorial Award 92 • Meghnad Saha Medal 93 • P C Chandra Puraskar 94 • Om Bhasin Award 95 • G M Modi Award 99 • Edward Dolezal Award 2000 • Lifetime Contribution Award, INAE 2001 • Vishwa Manava Award 2002 • Theodore Von Karman Award 2005 • Lifetime Award, ISRO 2007 • A V Rama Rao Technology Award 2008.

Rao, Vakethur Prabhakar*

Elected: 1959
Specialization: Entomology; Biological Control
Date of Birth: 22 August 1910
Parents: V Shakharam Rao and Amba Bai
Spouse and Children: Premalatha; two *s*, two *d*
Last Address: 129, 5th Main Road, Jayamahal Extension, Bangalore 560 046, India
***Deceased:** 19 December 1983

Education: Univ. of Madras: BA 31, MA 33; BHU, Varanasi: DSc 42.

Career: Directorate of Plant Protection and Quarantine: Entomologist and Asst Dir 48–55; Commonwealth Inst. of Biological Control, Bangalore: Entomologist-in-Charge 56–73; CIBC Sub-Station, Ghana: 73–75.

Scientific Work: Expert on Indian scale-insects (Coccoidea) with unique personal knowledge of the various types in the museums of the USA and UK. Studies on the distribution of two foreign insects (fluted scale & San Jose scale) in India and on their control by biological methods have led to tangible results. Trained in USA in plant quarantine work designed to safeguard against entry of foreign pests. Was also in charge of breeding Indian parasites and predators for use against crop pests in India and other Commonwealth countries.

Rao, Vallipe Ramgopal

Elected: 2009
Position: Prof., IIT Bombay
Specialization: Nanoelectronics; Nanotechnology
Date and Place of Birth: 16 August 1965; Kollapur
Parents: V Raghava Rao
Spouse and Children: Anupama; two *d* (Smriti, Sneha)
Address: EE Department, Indian Institute of Technology, Powai, Mumbai, 400076, India
Tel. (022) 2576 7456 (O), (022) 2576 8456 (R), Mobile: 98690 34490
email: rrao@ee.iitb.ac.in; URL: http://www.ee.iitb.ac.in/wiki/faculty:rrao

Education: Kakatiya Univ.: Btech 86; IIT, Bombay: MTech 91; Univ. der Bundeswehr, Germany: Dr. Ingenieur 97

Career: Univ. of California: Postdoc Fellow 97–98; EE Dept., IIT Bombay: Asst Prof 98–2001, Assoc. Prof 2002–04, Prof. 2005–.

Scientific Work: Has made outstanding contributions in the area of nano-scale devices. Innovative work has addressed various new types of devices, such as single halo devices, SOI-based single-halo devices, and sub-20 nm FINFETs. Ability to bring together the device-design aspects and their influence on circuit performance for mixed-signal applications has been a singular aspect of research. Has also addressed reliability issues in such devices, including hot-carrier and NBTI, and brought out the impact of these degradation mechanisms on circuit performance.

Important Publications: **(1)** *Sub-20 nm gate length FinFET design: Can high-K spacers make a difference (2008)* International Electron Devices Meeting (IEDM), San Francisco, CA **(2)** Device design & optimization considerations for bulk FinFETs (2008) *IEEE Trans. Electron Devices* **55**, 2, 609–615. **(3)** Impact of high K gate dielectrics on the device and circuit performance of nanoscale FinFETs (2007) *IEEE Electron Device Lett.* **28**, 4, 295. **(4)** NBTI degradation and its impact for analog circuit reliability (2005) *IEEE Trans. Electron Devices* 2609–2615. **(5)** A new oxide trap assisted NBTI degradation model (2005) *IEEE Electron Device Lett.* **26**, 9, 687–689.

Memberships: Fellow: INAE 2006.

Awards & Distinctions: Swarnajayanti Fellowship Award 2003–04 • S S Bhatnagar Prize 2006 • IBM Faculty Award 2007• MRSI-ICSC Superconductivity & Materials Science Prize 2008.

Rao, Vallurupalli Sita Raghavendra

Elected: 1974
Specialization: Conformation of Biopolymers
Date and Place of Birth: 1 February 1931; Gudlavalleru, Andhra Pradesh
Parents: Krishnayya V
Spouse and Children: Kalpagam; one *s* (Pramodh)
Address: No. 350, 1st A Cross, 8th Main, III Stage, IV Block, Basaveshwaranagar,
Bangalore 560 079, India
Tel. (080) 2323 0900 (R)

Education: Osmania Univ.: BSc 52, MSc 55, PhD 59.

Career: Purdue Univ., USA: Postdoc. Res. Assoc. 60–64; Univ. of Madras, Centre of Advanced Study in Phys: Reader 64–73; IISc, Bangalore, Molecular Biophysics Unit: Prof. 74–91; NIH, USA: Vis. Sci. 92–97.

Scientific Work: Specialist in carbohydrate structure and, in particular, the conformation and activity of polysaccharides and related biomaterials. In 1967 was the first to develop methods for investigating the structures of oligosaccharides and long-chain polysaccharides by using the idea of dihedral angles and of the bonds meeting at the bridge oxygen. Since worked on mechanism of action of penicillin; conformation of complex polysaccharides and peptidoglycan; stereochemistry of pyranose sugars and derivatives; conformations of ordered polysaccharides; and conformation of random polysaccharides. The most significant contributions are the studies on cell wall polysaccharides and the action of antibiotics, like pencillin and cephallosporin on them, leading to an extremely satisfactory theory of the mode of action of the antibiotics, and of their resistance to degradative enzymes. Application of computational studies of carbohydrates, in particular, the conformation of amylose both in solid state and solution and docking of sugar ligands to proteins.

Important Publications: **(1)** *Conformation of carbohydrates* (1998) Harwood Acad. Publ. **(2)** Conformational studies of amylose, *Conformation of biopolymers*, Academic Press, London, pp. 2721–2737. **(3)** Configurational statistics of polysaccharide chains (1969) *Biopolymers* **8**, 3, 325–333. **(4)** Theoretical studies on beta-lactam antibiotics (1977) *Int. J. Peptide Protein Res.* **10**, 1, 51–59. **(5)** The modes of binding methyl-alpha-D-glucopyranoside and some of their derivatives to concanavalin-A-A theoretical approach (1984) *J. Biomol. Struct. Dyn.* **2**, 1, 41–54.

Membership: INSA 81.

Awards & Distinctions: Sir J C Bose Award 77.

Rao, Yelseti Ramachandra*

Elected: 1935
Specialization: Entomology
Date and Place of Birth: 11 September 1885; Yemmiganur, Karnool Dist, Andhra Pradesh
Last Address: c/o H V Rao, Venkanna Street, Adoni, Andhra Pradesh, India
***Deceased:** 1 June 1972

Education: Univ. of Madras: BA 1903, MA 1906.

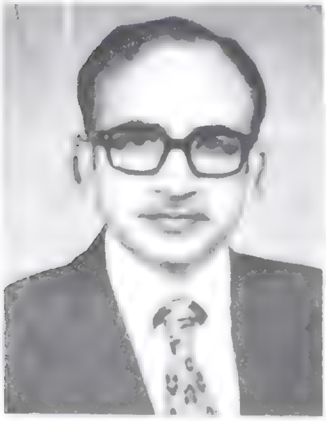
Career: Madras Agri. Dept: Entomological Asst 1906–13; Agri. Res. Inst, Coimbatore: In-Charge of Life History work 13–16; Govt of India, Insects Checks on *Lantana* Project: Investigator 16–18, Asst Entomologist on deputation to Agri. Dept in Iraq Govt 19–20; Agri. Dept Coimbatore: Asst Economic Entomologist 21; Govt Entomologist, Madras 22–30; Imperial Council of Agri. Res., New Delhi: Dy Entomologist in Quetta 31–33, Locust Res. Entomologist, Karachi 33–39, Delhi 39–41; Directorate of Plant Protection, Quarantine and Storage, New Delhi: Dy Dir of Foreign Quarantine 46–49.

Scientific Work: As Government entomologist at Agricultural College, Coimbatore, was responsible for the development of economic entomology, surveying insect pests of various crops and their control methods. In later years, work as locust entomologist for Government of India in Quetta and the North West was acknowledged as pioneering in the field of locust entomology.

Memberships: Member: Assn d'Acridologie, France • Hon. President: Entomology Sec. of All India Congress of Zoology.

Awards & Distinctions: Rao Sahib 20, Dewan Bahadur, Rao Bahadur 36.

Rastogi, Raghunath Prasad



Elected: 1975
Specialization: Physical Chemistry; Nonequilibrium Thermodynamics; Nonlinear Science
Date and Place of Birth: 4 June 1926; Lucknow, Uttar Pradesh
Parents: Purushottam Das Rastogi and Ram Janki
Spouse and Children: Kamla; two *s*, one *d* (Sharat, Prashant, Sushma)
Address: 295/281 KA, Asherfabad, Lucknow 266 003, India
Tel. (0522) 226 9638 (R)
email: rprastogi@yahoo.com

Education: Lucknow Univ.: BSc 46, BSc Hons 47, MSc 48, PhD 52.

Career: Lucknow Univ.: Lecturer in Chem. 49–59; Punjab Univ., Chandigarh: Reader in Chem. 59–62; Gorakhpur Univ., Dept of Chem.: Prof., Head 62–85; Vikram Sarabhai Space Res. Centre: Consultant 65–70; UGC: Natl Lecturer 73–74; BHU, Varanasi: Vice-Chancellor 85–91; CDRI, Lucknow: CSIR Emeritus Sci. 91–94; UGC and DST Emeritus Sci.; INSA Hon. Sci. 2007–.

Scientific Work: Made significant theoretical and experimental contributions in linear thermodynamics of irreversible processes with special reference to electrokinetic, electrophoretic and thermoosmotic phenomena and Dufour effect, along with equally significant contributions in nonlinear steady-state electrokinetic phenomena. Made important contributions in far-from equilibrium phenomena from the angle of nonlinear dynamics; also made contributions in thermodynamics and thermochemistry of eutectic mixtures, addition compounds, burning rate, ignitability and mechanism of combustion of composite solid, liquid and hybrid propellants.

Memberships: Fellow: NASI 72; INSA 75.

Awards & Distinctions: DSc hc • Khosla National Award 74 • FICCI Award 75 • Meghnad Saha Award 82 • Palit Memorial Award 85 • UPCST Award 2001 • Lifetime Award, Chemical Res. Soc., Indian Chemical Soc., High Energy Materials Res. Soc., Thermodynamic Soc. of India, Assn of Solid State Chemistry and Allied Sciences.

Rastogi, Ram Gopal

Elected: 1974
Specialization: Radio Propagation; Geomagnetism; Space Physics
Date and Place of Birth: 26 December 1929; Allahabad, Uttar Pradesh
Parents: R P Rastogi and Ram Sakhi
Spouse and Children: Malati; four *s*, one *d* (Sanjaya, Shashwat, Parth, Shubhra, Tarangini)
Address: Sprint Field, Judges Bungalow Road, Ahmedabad 380 054, India
Tel. (079) 2685 0207 (R)
email: profrgrastogi@yahoo.com

Education: Univ. of Allahabad: BSc 47, MSc 49; Gujarat Univ.: PhD 56.

Career: Univ. of Saugar, MP: Lecturer in Phys 49–51; PRL, Ahmedabad: Res. Scholar, Res. Asst 51–58, Fellow 62–64, Assoc. Prof. 64–69, Prof. 69–80, Emeritus Prof. and INSA Sr Sci. 90–94; National Res. Council, Canada: Res. Fellow 58–60; High Altitude Observatory and Central Radio Propagation Lab., USA: Postdoc Res. Fellow, Guest Worker 60–61; IAGA Commission for Developing Countries: Chmn 83–87; Indian Inst. of Geomagnetism, Bombay: Dir 80–89; US Air Force Geophys. Lab., USA: Sr Res. Assoc. 77–80; Univ. of Texas, USA: Vis. Prof. 74; Univ. of South Wales, Australia: Vis. Prof. 92; Gujarat Univ., Ahmedabad: Vis. Prof.

Scientific Work: Responsible for successful installation and operation of ionospheric research stations at Ahmedabad and Thumba. Organized ionospheric research projects in collaboration with many of universities to study ionospheric drifts, electron content and scintillations and other aspects of upper atmosphere. Conducted one of the most sophisticated satellite radio propagation experiments of Ootacamund during ATS-6 period. Introduced number of research programmes on upper atmosphere and solid earth studies transforming the Indian Institute of Geomagnetism, Bombay, into an important research centre in India. Also contributed to the various morphological aspects of the ionosphere at equatorial and low latitudes. Demonstrated intimate relationship between the geomagnetic field and the equatorial ionosphere. In geomagnetic field, discovered the longitudinal variation of equatorial electrojet and reversal of electric field during counter electrojet and many other features of electrojet current. Original contributions are on ionospheric irregularities like sporadic E and spread F and their role in satellite radio propagation effect, scintillations, Faraday rotation, dispersion, etc.

Important Publications: **(1)** The diurnal development of the anomalous equatorial belt in the F2 region of the ionosphere (1959) *J. Geophys. Res.* **64**, 727–732. **(2)** Effect of interplanetary magnetic field on ionosophere over the magnetic equator (1975) *Proc. Indian Acad. Sci.* **A82**, 121–141. **(3)** Ionospheric electron content within the equatorial F2 layer anomaly belt (1990) *J. Geophys. Res.* **95**, 19045–19052. **(4)** Magnetic storm effects at equatorial electrojet stations (2006) *Earth, Planets and Space* **67**, 645–657. **(5)** Asymmetries in the equatorial electrojet around N–E Brazil sector (2009) *Ann. Geophys.* **27**, 1233–1249.

Memberships: Fellow: INSA 82; NASI 83; Indian Geophysical Union; Assn of Exploration Geophysics.

Awards & Distinctions: Hari Om Ashram Award 77 • NASA Award 77, 82 • USSR Acad. of Sci. Commemoration Medal 84 • Japanese Geophysical Soc. Medal 85 • INSA K R Ramanathan Medal 2002.

Ratnasamy, Paul

Elected: 1989
Position: INSA-Ramanujan Res. Prof., NCL, Pune
Specialization: Catalysis; Zeolites; Solid State Chemistry
Date and Place of Birth: 11 June 1942; Madras
Parents: Ponnuswamy and Maria Soosai Ammal
Spouse and Children: Michele; two *d*
Address: National Chemical Laboratory, Pune 411 008, India
Tel. (020) 2590 2005 (O), (020) 2589 8058 (R), Mobile: 98904 19451
email: paul_ratnasamy@yahoo.com

Education: Univ. of Madras: BSc 61, MSc 63, PhD 67.

Career: Clarkson College of Technol., USA: Res. Assoc. 67–69; Univ. of Louvain, Belgium: Res. Assoc. 69–72; Indian Inst. of Petroleum, Dehradun: CSIR Sci. 72–79; NCL, Pune: Sci. 79, Head of Inorganic Chem. Dn 83–86, Head of Phys. & Inorganic Chem. Dn 86–95, Dir 95–2002, Dir Grade Sci. 2002–04, INSA Srinivasa Ramanujam Res. Prof. 2005–.

Scientific Work: Focus of research is identification, structure elucidation and determination of catalysts. Showed for the first time correlation in the acidic and catalytic properties of ZSM-5 zeolites in xylene isomerization. Synthesized a novel ferrosilicate zeolite and assessed its application potential. Responsible for developing a series of zeolites called Enciltes, many of which are superior to the best existing catalysts in the world for the specific petrochemical reactions involved. Fundamental contributions also in application of the radial electron density distribution profiles to the study of amorphous alumini. Development of structural models for the alumina surface is equally noteworthy.

Memberships: Member: Council of Intl Zeolite Assn • Fellow: INSA 87; NASI 89; INAE; Catalysis Soc. of India.

Awards & Distinctions: VASVIK Award 82 • S S Bhatnagar Award 84 • K G Naik Gold Medal 89 • Bangur Memorial Award 89 • Om Prakash Bhasin Award 93 • INSA Vishwakarma Medal 94 • Padma Shri 2001.

Rau, A Subba*

Elected: 1936
Specialization: Zoology
Date of Birth: February 1890
Last Address: 930, Laxmipuram, Mysore, India
***Deceased**

Education: Univ. of London: MSc 22, DSc 25.

Career: Central College, Bangalore: Prof. 14–20, Univ. College London: Prof. of Zoology 20; Univ. Med. College, Mysore: Prof. of Physiology; Carnegie Res. Fellowship.

Scientific Work: Successfully worked out the development of the sympathetic nervous system and suprarenal bodies in the bird. Research on the mammalian placenta formed a valuable contribution. Sustained research interest in zoology by studying the anatomy and embryology of *Loris lydekkerianus*.

Awards & Distinctions: Carnegie Fellowship of British Empire.

Rau, Musiri Ananthapadmanabha Govinda*

Elected: 1934
Specialization: Chemical Engineering
Date and Place of Birth: 26 August 1901; Viswammalsamudram, Trichi Dist, Tamil Nadu
Parents: Musiri Ananthapadmanabha Rau and Venkatalakshmi
Spouse and Children: Sethu bai; two *s*, two *d*
Last Address: A C College of Technology, Guindy, Saidapet Post, Madras, India
***Deceased:** 19 November 1954

Education: Univ. of Madras: MA Hons 22, MA 24; Univ. of London: PhD 28.

Career: IISc, Bangalore, Dept of Chemical Engg: Res. Student 22–25, Lecturer in Chem 28–35, Lecturer in Phys 35–39, Head Chem. Engg Dept 39–44; Alagappa Chettiar College of Technol.: Reader in Chemical Engg, Prof. and Dir 44–54.

Scientific Work: Contributions in research work relate to dielectric constants, dipole moments, ultrasonics, and various topics in chemical engineering. Contributions to physical chemistry have also been highly commendable.

Ravindranath, Vijayalakshmi

Elected: 2001
Position: Prof., IISc, Bangalore
Specialization: Neuroscience; Toxicology; Pharmacology
Date and Place of Birth: 18 October 1953; Chennai, Tamil Nadu
Parents: A K Raman and Shashi Kala Raman
Spouse and Children: B Ravindranath
Address: Centre for Neurosciences, Indian Institute of Science, Bangalore 560012, India
Tel (080) 2293 3433(O), (080) 4122 9793(R)
email viji@cns.iisc.ernet.im; viji.ravindranath@gmail.com

Education: Andhra Univ.: BSc 72, MSc 74; Mysore Univ.: PhD 81.

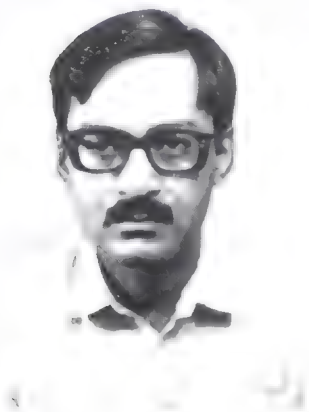
Career: IISc: Project Asst 75, Prof. 2009–; CFTRI: Res. Fellow 76–81; Reg. College of Edu.: Lecturer 81–82; Natl Cancer Trust, USA: Vis. Fellow 82–85; NIMHANS: Pool Offr 85–86, Assoc. Prof. 86–92, Addl Prof. 92–2000; NBRC: Dir 2000–09; IISc: Prof. 2009–.

Scientific Work: Major research interests pertain to understanding the pathogenesis of neurodegenerative disorders with the overall goal of discovering disease modifying therapies. Research interest focusses on the metabolism of psychoactive drugs in the brain. Demonstrated that P-450 enzymes are also present in the brain where drug metabolism can take place. This area of research is highly relevant in the development of drug used to treat mental illness such as depression, obsessive-compulsive disorder, schizophrenia and anxiety disorders

Memberships: Fellow: NASI 98; INSA 2005; Intl College of Neuropsychology; Indian Acad. of Neurosciences.

Awards & Distinctions: S S Bhatnagar Mem. Prize 74 • Jeypore Vikram Deo Medal 74 • T Seshadri Prize 74 • S S Bhatnagar Award 96 • Om Prakash Bhasin Award 2001.

Ray, Deb Shankar



Elected: 1995
Position: Prof., IACS, Kolkata
Specialization: Nonlinear Dynamics; Nonequilibrium Statistical Mechanics
Date and Place of Birth: 2 January 1954; Calcutta, West Bengal
Parents: Bhairab Kumar Ray and Anupama Ray
Spouse and Children: Trishna; one *s*
Address: Department of Physical Chemistry, Indian Association for the Cultivation of Science,
Jadavpur, Kolkata 700 032, India
Tel. (033) 2473 5374 (O), (033) 2571 2906 (R)
email: pcdsr@iacs.res.in

Education: Calcutta Univ.: BSc Hons 73, MSc 75, PhD 82.

Career: IACS: Res. Assoc. 77–84; Jadavpur Univ.: Lecturer 84–86; IACS: Sr Lecturer 86–91, Reader 91–97, Prof 97–2005, Sr Prof. 2005–.

Scientific Work: The current thrust of the group is to investgate problems on nonlinear dynamics. chemical dynamics and stochastic processes, particularly in the context of rate theory of chemical reactions, quantum Brownian motion, nonequilibrium fluctuation-induced phenomena like ratchets and pattern formation in reaction diffusion systems.

Important Publications: **(1)** Conformational relaxation in the excited electronic states of Benzil and Napthil (1980) *Chem. Phys. Letts.* **75**, 134. **(2)** Lorentz-type optical chaos in three-wave mixing (1984) *Phys. Rev.* **A29** 3440. **(3)** Optical multistability with Fibonacci multilayer (1988) *Phys. Rev.* (Rapid Comm.) **B38**, 3628. **(4)** Fluctuation-diffusion relationship in chaotic dynamics (1993) *Phys. Rev.* **E47**, 311. **(5)** Approach to quantum Kramers equation and barrier crossing dynamics (2002) *Phys. Rev.* **E65**, 021109.

Awards & Distinctions: INSA Young Scientist Award 84 • S S Bhatnagar Prize 99.

Raychaudhuri, Amal Kumar*

Elected: 1982
Specialization: General Relativity; Gravitation; Cosmology
Date and Place of Birth: 1 November 1923; Barisal; Bangladesh
Spouse and Children: Nomita Sen; two *s*, two *d* (Amlanava, Asimava, Madhukshara, Parongama)
Last Address: Centre of Relativity and Cosmology, Jadavpur University, Calcutta; 102/D Ballygunge Place,
Calcutta 700 019, India
***Deceased:** 18 June 2005

Education: Calcutta Univ.: BSc 42, MSc 44, DSc 60.

Career: IACS, Kolkata: Res. Scholar 45–49, Res. Offr 52–61; Presidency College, Kolkata: Prof. 61–; Univ. of Maryland, USA: Natl Sc. Foundation Vis. Prof. 64–65; Jadavpur Univ., Calcutta: Hon Vis. Prof.; INSA Sr Sci. 88–91

Scientific Work: An internationally renowned general relativist, deduced an equation (named after him) which played a crucial role in the investigations on singularity in relativistic cosmology. Pioneering investigations during the fifties culminated in this equation which is extensively used in the study of space time structure. It is basic to the important singularity theorems the first of which was formulated by him. Also made many other fundamental contributions to cosmology. Range of interests also include exact solutions, electromagnetism in curved spacetimes and the Einstein–Cartan theory.

Important Publications: **(1)** *Theoretical cosmology* (1979) Clarendon Press, Oxford. **(2)** *Classical mechanics: A course of lectures* (1983) Oxford Univ. Press. **(3)** *Classical theory of electromagnetic fields* (1990) Oxford Univ. Press. **(4)** *General relativity astrophysics and cosmology* (1992) Springer–Verlag.

Memberships: Member: Executive Council of International Soc. for General Relativity and Gravitation, Switzerland • President: Indian Assn for General Relativity and Gravitation • Fellow: INSA 87; NASI.

Awards & Distinctions: INSA-Vainu Bappu Memorial Award 91 • A C Banerjee Memorial Lecture Award • Universities of Burdusan, Kalyani, Vidyanagar: DSc (hc).

Raychaudhuri, Amitava

Elected: 2006
Position: Dir, HRI, Allahabad
Specialization: Particle Physics
Date and Place of Birth: 17 March 1952; Calcutta, West Bengal
Parents: Arun Kumar Raychaudhuri and Himani
Spouse: Devbani
Address: Harish-Chandra Research Institute, Chhatrag Road, Jhusi, Allahabad 211 019, India
Tel. (0532) 227 4301, (0532) 227 4001, Mobile: 99356 97049
email: palitprof@gmail.com, raychand@mri.ernet.in

Education: Univ. of Calcutta: BSc 70; Univ. of Delhi: MSc 73; Univ. of Maryland USA: PhD 77.

Career: Univ. of Maryland, USA: Teach. and Res. Asst 73–77; Univ. of Oxford, UK: Res. Assoc. 77–79; Univ. of Calcutta: Lecturer 80–86, Reader 87–96, Palit Prof. 96–2005; TIFR: Vis. Fellow 79–80; Harish-Chandra Res. Inst.: Dir. 2005–.

Scientific Work: A leading phenomenologist who has made oustanding contributions in a variety of areas of particle physics and astroparticle physics. Earliest to do a comprehensive global analysis of the results from all the atmospheric, reactor, and accelerator neutrinos to constrain models of three flavour mixing; early analysis of and tightest constraints on supersymmetric parameters from results of LEP (CERN); neutrino masses from supersymmetric couplings; first comprehensive analysis of CP-violation in supersymmetric models; set stringent lower bound on the right-handed weak gauge boson from LEP data.

Important Publications: **(1)** Reactor antineutrino spectra, neutrino oscillations and deuteron disintegration (1980) *Phys. Lett.* **96B**, 315. **(2)** Super Kobayashi–Maskawa CP-violation (1984) *Phys. Lett.* **140B**, 349. **(3)** A curiouis Gedanken example of the Einstein–Podolsky–Rosen paradox using CP nonconservation (1987) *Phys. Lett.* **123A**, 4. **(4)** Z decay confronts non-standard scenarios (1990) *Phys. Rev. Lett.* **64**, 2870. **(5)** Accelerator, reactor and atmospheric neutrino data: A three-flavour oscillation analysis (1997) *Int. J. Mod. Phys.* **A12**, 781. **(6)** Neutrino mass hierarchy and theta 13 with a magic baseline beta-beam experiment (2007) *Nucl. Phys.* **B771**, 1–27.

Memberships: Fellow: INSA 2002; NASI 2001.

Awards & Distinctions: S S Bhatnagar Award 97 • Meghnad Saha Gold Medal 2005 • Homi Bhabha Lecturer 2006.

Raychaudhuri, Arup Kumar

Elected: 1993
Position: Dir & Sr Prof., S N Bose National Centre for Basic Sciences, Kolkata
Specialization: Nanosciences and Technology; Experimental Solid State and Low Temperature Physics; Instrumentation Development
Date and Place of Birth: 1 March 1952; Calcutta
Parents: Asok Kumar Raychaudhuri and Madhabi
Spouse and Children: Uma; one *d*
Address: S N Bose National Centre for Basic Sciences, JD Block, Sector 3, Salt Lake, Kolkata 700 098, India
Tel. (033) 2335 5709 (O), (033) 2354 1884 (R)
email: arup@bose.res.in

Education: MS Univ., Baroda: BSc 73; IIT Kanpur: MSc 75; Cornell Univ., USA: PhD 80.

Career: Max Planck Inst. Stuttgart: Alexander von Humboldt Fellow 80–82;IISc, Bangalore, Dept of Phys.: Lecturer 82–86, Asst Prof. 86–91, Assoc. Prof. 91–97, Prof. 97, 2000–04; Cornell Univ., USA: Vis. Prof. 89–90; NPL, New Delhi: Dir 97–2000, S N Bose Natl Centre for Basic Sciences: Sr Prof. 2004–2006, Dir 2006–.

Scientific Work: Contributions mainly in glass transition and glassy state at very low temperatures; quantum transport in oxides at very low temperatures; scanning tunnelling microscopy and spectroscopy. Has designed and fabricated indigenously a scanning tunneling microscope working down to 2K and used it for tunnelling studies on high temperature superconductors and perovskite oxides. Pioneered the studies of quantum transport and metal-insulator transition in perovskite oxides below 1K opening up new avenue in this area. Major contribution also in experimental studies of two-level systems in glasses and the glass transition phenomena.

Memberships: Fellow: NASI 2000; INSA 2001.

Awards & Distinctions: Indian Physics Assn • N S Satyamurthy Award 86 • IASc Assoc. 86–89 • S S Bhatnagar Award 94 • MRSI Medal 96 • ISCA Millenium Medal 2000 • FICCI Award 2003.

Raymont, John Edwin George*

Elected: 1967
Specialization: Zooplankton
Date of Birth: 6 April 1915
Parents: Walter Raymont and Ellen
Spouse and Children: Joan Kathanine Brigit Sloan; one *s*, two *d*
Last Address: 4 Chessel Avenue, Bittirne, Southampton, UK
***Deceased:** 30 August 1979

Education: Univ. of London: BSc Hons 36; Univ. of Harvard: DSc.

Career: Univ. College, Exetor, UK: Asst Lecturer in Zoology 38–39; Univ. of Edinburgh: Lecturer 39–46; The Univ. of Southampton, UK, Dept of Oceanography: Prof. and Head.

Scientific Work: Worked on organic production in the sea. Made significant contributions on the role of artificial fertilizers in increasing production of animal and plant life in the sea. Also known for physiological and bio chemical studies on marine zooplankton. Contributed to the study of effects of radioactive fall out on marine animals. Also contributed extensively to the heating of water by power stations and its effects on biological productivity in estuaries.

Reddy, Amulya Kumar Narayana*

Elected: 1974
Specialization: Rural Technology; Energy Analysis; Electrochemistry; Science and Technology Policy
Date and Place of Birth: 21 October 1930; Bangalore
Parents: B V Narayana Reddy and Lakshmi
Spouse and Children: Vimala; three *d*
Last Address: International Energy Initiative, 25/5 Bore Bank Road, Benson Town, Bangalore 560 046, India
***Deceased:** 7 May 2006

Education: Univ. of Mysore: BSc Hons 51, MSc 54; Univ. of London: PhD 58.

Career: Univ. of Mysore, Bangalore, Central College: Lecturer in Chem. 51–58; Central Electrochemical Res. Inst., Karaikudi: Sr Sci. Offr 58–61; John Harrison Lab. of Chem., Univ. of Pennsylvania, USA: Sr Res. Assoc., Res. Supervisor 61–66; Princeton Univ., USA: Vis. Sr Res. Sci. 83–85; IISc, Bangalore, Dept of Inorganic and Physical Chem.: Prof. 70–91, ASTRA Convener 74–83, Secy KSCST 75, Chmn, Dept of Management Studies 85–91, Dean of Faculty of Sci. 80–81; Intl Energy Initiation, Bangalore: President and Editorial Board Member 92–2006.

Scientific Work: In early career, an authority in experimental electrochemistry, pioneered the use of ellipsometry. Several contributions centred around the structure and growth of electrodeposits – their preferred orientations and techniques of observations, especially *in situ* optical techniques to study anodic films. Involved in designing, constructing and disseminating rural energy and water supply utilities based on renewable sources of energy particularly bio-mass. Developed the development-focussed, end-use-oriented, service directed (DEFENDUS) approach to environmentally concerned energy analysis and planning. Major pioneering role in attracting attention and re-orienting work of advanced institutions of education, science and technology in India, and concerned workers/agencies abroad to important topics such as rural energy consumption patterns and technologies, bio-gas technology, urban consumption of firewood, etc. Directed and carried out research which led to innovations in bio-gas technology; first insights into rural energy consumption patterns revealing the central role of bio-mass fuels such as firewood – the quantities involved, who collects them, and the effort involved – and the requirements of cooking energy; discovering the unexpectedly large role of firewood in the energy consumption patterns of a modern metropolis like Bangalore. Responsible for the establishment of the international NGO, International Energy Initiative, ASTRA devoted primarily to the generation of rural technologies; Karnataka State Council for Sc. & Technol. to catalyse the re-orientation of institutional efforts in Karnataka and to disseminate new technologies.

Important Publications: (1) *Modern electrochemistry* (1970) Plenum Press, New York. (2) *Energy for a sustainable World* (1988) Wiley-Eastern, Delhi.

Awards & Distinctions: Shantiniketan Rathindra Puraskar 82 • Viswa Bharati Univ. Rathendra Puraskar 82 • INSA B D Tilak Award 85 • Om Prakash Bhasin Award 88 • American Council for an Energy Efficient Economy • Champion of Energy Efficiency Award.

Reddy, Arjula Ramachandra

Elected: 2003
Position: Vice Chancellor, Yogi Vemana Univ., Kadappa
Specialization: Genetics, Plant Molecular Genetics; Plant Genomics
Date and Place of Birth: 5 June 1945; Tharigoppula, Warangal, Andhra Pradesh
Parents: Arjula Raghavendra Reddy and Ahalya Devi
Spouse and Children: Vijayalakshmi; two *d* (Vaishali, Shailaja)
Address: Yogi Vemana University, Vemanapuram, Kadappa 516 003, India
Tel. (08562) 225 411 (O), (08562) 249 912, (040) 2300 3123 (R), Mobile: 98858 43003
email: arjulsl@uohyd.ernet.in, arjulsl@yahoo.com

Education: Osmania Univ.: BSc 68; MSc 70; PhD 75.

Career: Iowa State Univ., USA: Postdoc 75–77; The Johns Hopkins Univ., USA, Postdoc 77–78; Univ. of Hyderabad: Reader 79–87, Prof. 87–2008; Max Planck Inst., Germany: Vis. Sci. 85–86; Purdue Univ.: Vis. Prof. 2000; Yogi Vemana Univ. Kadapa: Vice Chancellor: 2008–.

Scientific Work: Contributed significantly to genetic and molecular dissection of regulatory circuits that govern the expression of dispersed genes controlling diverse stress response pathways in plants, particularly rice. Long-standing and widely quoted work on maize genes of the colour pathway provided a strong base for later studies on rice. Extensive work resulted in the molecular characterization of genes associated with UV-B response, molecular cloning and sequence characterization of both structural and regulatory genes and development of rice transgenics carrying maize *chalcone synthase* gene showing colour and improved performance against the fungal blast pathogen. Using tools of functional genomics and gene discovery, generated a rice unigene set and contributed 1500 sequences to GenBank and annotated about 600 genes with putative function and BAC localizations. This high impact work on molecular breeding and functional genomics of drought tolerance will significantly accelerate gate discovery research in rice.

Important Publications: **(1)** Isolation and characterization of expressed sequence tags (ESTs) from subtracted cDNA libraries of *Pennisetum glaucum* seedlings (2007) *Plant Mol. Biol.* **64**, 6, 713–732. **(2)** Identification of stress-responsive genes in indica rice (*Oryza sativa L.*) using ESTs generated from drought-stressed seedlings (2007) *J. Exp. Bot.* **58**, 253–265. **(3)** Novel transgenic rice overexpressing anthocyanidin synthase accumulates a mixture of flavonoids leading to an increased antioxidant potential (2006) *Metabolic Engineering* **9**, 95–111. **(4)** Functional genomics of drought stress response in rice: Transcript mapping of annotated unigenes of an indica rice (*Oryza sativa* L. cv. Nagina 22) (2005) *Curr. Sci.* **89**, 3, 496–514. **(5)** Rice DREB1B promoter shows distinct stress-specific responses, and the overexpression of cDNA in tobacco confers improved abiotic and biotic stress tolerance (2008) *Plant Mol. Biol.* **68**, 6, 535–555.

Memberships: Member: Intl Soc. Plant Mol. Biol.; Guha Res. Council 97–2000.

Awards & Distinctions: Alexander von Humboldt Fellowship 85–86 • World Food Inst. Scholarship 82 • Rockefeller Foundation Career Biotechnology Award 2000.

Reddy, Chintala Raja Ram Mohan

Elected: 1980
Specialization: Pathology; Parasitology; Cancer Epidemiology
Date and Place of Birth: 16 January 1929; Cuddapah, Andhra Pradesh
Parents: C R Krishna Reddy and C Adilakshmamma
Spouse and Children: Sita Devi; one *s*, one *d*
Address: 404, Mount Kailash Apartments, Road No. 4, Banjara Hills, Hyderabad 500 034, India
Tel. (040) 2335 3657, (040) 2653 0752 (R)
email: crrmreddy@yahoo.com

Education: Andhra Univ.: MBBS 52, MD 56, PhD 72, DSc 76.

Career: Andhra Med. College, Visakhapatnam: Demonstrator 54, Tutor 54–56, Asst Prof. of Pathology 57–58, Prof. 69–78, Sr Prof. of Pathology 78–83; Kurnool Med. College, Kurnool: Lecturer in Forensic Med. 58–60, Prof. of Pathology 60–69; Govt of Andhra Pradesh, Hyderabad: Dir of Med. Education 83–86.

Scientific Work: Worked on the habit of reverse smoking and its relation to carcinoma of palate. Extensive work on carcinoma of penis. Did work on epidemiology of guinea worm disease in certain parts of Rayalaseema area of Andhra. Investigated other tropical and parasitological diseases such as Hydatid disease and the pathogenesis of a well-defined entity of aropharyngeal cancer called Chutta cancer.

Memberships: Fellow: INSA 85; Royal Soc. of Trop. Med. & Hygiene, London; Indian College of Pathologists.

Awards & Distinctions: DSc hc • Hari Om Ashram Alembic Res. Award 79.

Reddy, Vellenki Umapathi

Elected: 1991
Position: Prof., IIIT, Hyderabad
Specialization: Signal Processing; Communications
Date and Place of Birth: 10 August 1939; Venkiryal, Andhra Pradesh
Parents: Venkat Ram Reddy and Laxmi Narasamma
Spouse and Children: Vijayalaxmi; one *s*, one *d* (Sridhar, Geeta)
Address: International Institute of Information Technology, Gachibowli, Hyderabad 500 032, India
Tel. (040) 2300 1967/345 (O), (040) 2311 4725 (R), Mobile: 98481 35781
email: vur@iiit.ac.in

Education: Osmania Univ.: BE 62; IIT Kharagpur: MTech 63; Univ. of Missouri, USA: PhD 71.

Career: IIT Kharagpur, Dept of Electronics & Electrical Communication Engg: Res. Fellow 63–65; Osmania Univ., Hyderabad, Dept of Electronics and Communication Engg: Lecturer 65–67; IIT Madras, Dept of Electrical Engg: Asst Prof. 72–76; IIT Kharagpur, Radar and Communication Centre: Prof. 76–79; Stanford Univ., USA, Dept of Electrical Engg: Vis. Prof. 79–82, 86–87; Osmania Univ., Res. and Training Unit for Navigational Electronics: Prof.

and Project Dir (Founding Dir) 82–88; IISc, Bangalore, Dept of Electrical Communication Engg: Prof. 88–2001; Hellosoft India Pvt. Ltd: CTO. 2001–03; IIIT, Hyderabad: Microsoft Chair Prof. 2003–05, Inst Prof. 2007–; Hellosoft India Pvt. Ltd: Chief Sci. 2005–08; C R Rao Inst. Methematics, Statistics & Computer Sci., Hyderabad: Dist. Sci. Emeritus 2000–.

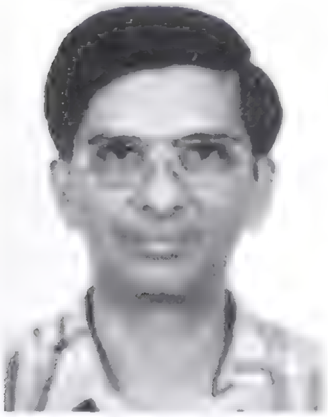
Scientific Work: Fundamental contributions to the development and performance analysis of optimal algorithms, and efficient implementations thereof, for several important problems in the area of high-resolution model-based signal processing. Work on the error analysis of fast Fourier transform (FFT) algorithms, including the successful prototyping of 32-point FFT processor had significant influence on the development of LRDEs first contemporary pulse-doppler radar. Recent work focussed on the development and analysis of fast adaptive algorithms for estimating the eigensubspace of a data covariance matrix. Such algorithms play a major role in the real-time implementation of subspace-based methods. Most recent research focussed on frame and frequency synchronization in OFDM based wireless communication systems and low complexity decoders for V-BLAST (a MIMO wireless communication system).

Important Publications: **(1)** Techniques on optimum weighted smoothing (1994) *Stochastic techniques in DSP systems*, Academic Press Series on Advances in Control and Dynamic Systems. **(2)** Adaptive estimation of eigensubspace (1995) *IEEE Trans. Signal Processing,* 401–411. **(3)** Performance analysis of the optimum beamformer in the presence of correlated sources and its behaviour under spatial smoothing (1987) *IEEE Tran. Acoustics, Speech and Signal Processing,* 927–936. **(4)** Least squares type algorithm for adaptive implementation of Pisarenko's harmonic retrieval method (1982) *IEEE Trans. ASSP,* 399–405. **(5)** Optimised lattice-form adaptive line enhancer for a sinusoidal signal in broadband noise (1981) *IEEE Trans. ASSP,* 702–710 **(6)** Fixed point error analysis of normalized ladder algorithms (1983) *IEEE Trans. ASSP,* 1177–1191.

Memberships: Fellow: INAE 92; INSA 93; IEEE 99.

Awards & Distinctions: IETE S K Mitra Memorial Award 89.

Rindani, Saurabh Dilsukhrai



Elected: 2009
Position: Sr Prof., PRL, Ahmedabad
Specialization: Particle physics
Date and Place of Birth: 13 June 1952; Mumbai
Parents: Dilsukhray and Nilanjana
Spouse: Shakuntala Sastry
Address: Theoretical Physics Division, Physical Research Laboratory, Navrangpura,
Ahmedabad 380 009, India
Tel. (079) 2631 4462 (O), (079) 2686 0148 (R)
email: saurabh@prl.res.in; URL: http://www.prl.res.in/~saurabh

Education: Univ. of Bombay: BSc 71; IIT Bombay: MSc 73, PhD 76.

Career: Imperial College, UK: Postdoc 76–77; IIT Kanpur: Res. Assoc., 77–78; Univ. of Madras: Lecturer, 78–85; Inst. of Mathematical Sci.: Reader, 85–89; Physical Res. Laboratory: Assoc. Prof. 89–97, Prof. 97–2005, Sr Prof. 2005–.

Scientific Work: Devising of innovative probes to study CP violation in high-energy interactions with the use of beam polarization as well as polarization of produced particles; model-independent analyses of effects beyond the standard model of particle physics in top-quark physics, particularly, the study of CP violation through top-quark polarization and its decay distributions; the role of symmetry in formulating elegant theories of neutrino masses and mixing with predictions in agreement with experimental observations; compactification of string theories and formulation of consistent interacting theories for particles with higher spin starting from higher-dimensional theories.

Important Publications: **(1)** Determining the CP properties of the Higgs boson (2008) *Phys. Rev. Lett.* **100**, 051801. **(2)** Effect of anomalous tbW vertex on decay-lepton distributions in $e^+e^- \to t\bar{t}$ and CP-violating asymmetries (2000) *Pramana – J. Phys.* **54**, 791. **(3)** Neutrino anomalies in an extended Zee model (1999) *Phys. Lett.* **B 464**, 239. **(4)** Majoron models and the Higgs search (1992) *Phys. Rev. Lett.* **69**, 3269. **(5)** Supersymmetric compactification of the heterotic string on coset spaces (1986) *Phys. Rev. Lett.* **57**, 2489.

Memberships: INSA 2008.

Awards & Distinctions: Wagh Prize, Univ. of Bombay 68 • Institute Silver Medal, IIT Bombay 73 • Commonwealth Scholarship of the Government of UK 76–77; ICTP Sr Assoc. 97–2002, 2003–08.

Rindani, Tansukh Harshadray

Elected: 1960
Specialization: Endocrinology; Physiology; Stress
Date and Place of Birth: 17 April 1917; Jodhpur, Rajasthan
Parents: Harshadray and Anopkunvar
Spouse and Children: Renuka; three *d* (Geeta, Keerti, Deepti)
Address: 52, Gulmohar, New MIG Colony, Kher Nagar, Bandra East, Mumbai 400 051, India
Tel. (022) 2647 5113 (R)

Education: Bombay Univ.: MBBS 39, MD 43, DSc 64.

Career: B J Hospital, Sir J J Group of Hospitals and Grant Med. College, Bombay: House Physician 40–41, Demonstrator in Pathology 41–42; Topiwala Natl Med. College, Bombay, Dept of Physiology: Asst Prof. 46–52, Head of Dept 49–52, Prof. 52–62, Dean 63–72; Inst. of Experimental Medicine & Surgery, Canada: Vis. Sci. 52–53; Jaslok Hospital and Res. Centre, Bombay: Med. Dir 72–82, Dir of Res. 88–91.

Scientific Work: Stress has been studied for two aspects: general and local. Experimental inflammation in rats has been studied as a model of local stress. Participation of reticulo endothelium system locally as well as cellular and hormonal aspects has been investigated. Topical effects of hormones, hormonal antagonism at tissue level and recovery of an anti-inflammatory chemical from inflammatory exudate to complete the biochemical theory of inflammation are some of the studies. Systemic stress was studied in rats and in humans for its parameters and effect of extract of *R. serpentina*. Cytochemical studies using succinic dehydrogenase level as a parameter were carried out in gonads (male rats) for effects of stress and hormonal substitution. Studies on steroids, electrolytes and cardiac activity were also made. Topical action of several steroids on heart and other tissues was examined.

Important Publications: (1) Inflammation as influenced by a topical reticulo-endothelial blockade (1953) *Brit. J. Exper. Path.* 34, 674. (2) Peripheral antagonism between hydrocortisone and compound 'S' (1954) *Proc. Soc. Exp. Biol. Med.* 87, 345. (3) Recovery of an anti-inflammatory fraction from inflammatory exudate (1956) *Ind. J. Med. Res.* 44, 697. (4) The influence of testosterone propionate on the succinic dehydrogenase activity of male rat liver (1958) *Am. J. Physiol.* 193, 1, 73. (5) Influence of hydrocortisone on the action of sodium on isolated rabbit auricles (1958) *Nature* 122, 1521.

Memberships: Fellow: All India Inst. of Diabetes; NAMS.

Awards & Distinctions: Univ. of Bombay Moos Gold Medal 65 • Jugatram Dave Memorial Prize, Bombay Medical Union, Bombay 78 • Assn of Physiologists and Pharmacologists of India, Delhi, M L Gupta Prize 82.

Rode, Keshava Prabhakar*

Elected: 1944
Specialization: Petrology; Tectonics
Date and Place of Birth: 8 November 1903; Chindwara, Maharashtra
Parent: Pandit Prabhakar Shastri
Spouse and Children: Saraswati; one *d*
Last Address: 225-D, Gokulpet, Nagpur 440 010, India
***Deceased:** 2 December 1985

Education: BHU, Varanasi: BSc 25, MSc 27; Univ. of Zurich, Switzerland: PhD 39.

Career: BHU, Varanasi: Asst Prof. 27–41; Erskine College of Natural Sci., Andhra Univ.: Prof. and Head 41–44; Dalmia Jain Industries Ltd: Chief Geologist 44–50; Univ. of Rajasthan: Reader 50–52, Prof. and Head 52–68.

Scientific Work: Initial work included geological study of Norcote peninsula and the petrochemistry of the porphyry magma of Lugano, Switzerland. Later work looked into the evolution of continents by movements of sheets. Fundamental conception of theory was that the continents had expanded by repeated movement of sheets which orginally were closely packed like playing cards piled up together within the region of the Tibetan Himalayan Mountain system.

Memberships: Fellow: NASI; Geological Mining and Metallurgical Soc. of India • President: Geology & Geography Sec. of Indian Sci. Congress 62.

Rodrigues, Veronica Filomena

Elected: 1995
Position: Prof., NCBS, Bangalore
Specialization: Neurogenetics; Genetics; Developmental Biology
Date and Place of Birth: 31 March 1953; Nairobi, Kenya
Parents: Caetano Jaao Rodrigues and Albina Purificacoa
Address: Department of Biological Sciences, National Centre for Biological Sciences,
GKVK Campus, Bangalore
Tel. (022) 2278 2529 (O), (022) 2218 9546 (R)
email: veronica@tifr.res.in

Education: Univ. of Dublin, Ireland: BA 76; Bombay Univ.: PhD 81.

Career: TIFR, Molecular Biology Unit: Res. Assoc. 81–85, Fellow 85–91, Reader 91–94, Assoc. Prof. 94–98, Prof. 98–; NCBS, Bangalore: Prof 98–; Max Planck Inst. fur Biologische, Kybernetite, Germany: Postdoc Fellow 82–84.

Scientific Work: Pioneering initiative led to first detailed search for *Drosophila* chemosensory mutants. Amongst first to use 3H-2-deoxyglucose to map regions of the brain that respond to chemosensory cues leading to important models of olfactory information processing. Has analysed several chemosensory genes, using electrophysiology, elegant behavioural assays, developmental techniques and molecular methods. These studies have resulted in the first molecular analysis of a taste mutant and show that the scalloped gene encodes a product with extensive homology to a human transcription factor. Analysis of sensory neurons has shown that olfactory and taste sensilla develop in significantly different ways. Interested in mechanisms underlying the function and development of the chemosensory systems in *Drosophila melanogaster*.

Memberships: Fellow: INSA 2003.

Awards & Distinctions: IASc Assoc. 83–88.

Rodriguez, Placid*

Elected: 1993
Specialization: Mechanical Metallurgy; Nuclear Materials; Materials Science Engineering
Date and Place of Birth: 5 October 1940; Quilon, Kerala
Parents: J Joseph Rodriguez and Polly
Spouse and Children: Blossom Valerie; one *s*, one *d*
Last Address: Flat 2B , Aditya Apartments, 38, Balakrishna Road, Valmiki Nagar, Chennai 600 041, India
***Deceased:** 31 August 2008

Education: Univ. of Kerala: BSc 58; IISc, Bangalore: BE 60, PhD 76; BARC, Bombay: Postgraduate training in Metallurgy 61; Tennessee Univ., USA: MS 65.

Career: BARC, Bombay, Metallurgical Dn: Sci. Offr 61–69, Group Leader of Mechanical Properties Group 69–74; Indira Gandhi Centre for Atomic Res., Kalpakkam: Head, Metallurgy and Materials Programme 74–92, Dir 92–2000; Recruitment and Assessment Centre of Defence Res. and Development Organisation, New Delhi: Chmn 2000–2003; IIT Madras: Raja Ramanna Fellow 2004–08; NIT, Surathkal, Nagpur, Tiruchirapalli & PSG College of Technol., Coimbatore: AICTE-INAE Distinguished Vis. Prof.

Scientific Work: Early research in dislocation dynamics is unique for combining different approaches like thermal activation strain rate analysis, transmission electron microscopy and the identification of acoustic signals emitted during deformation process. Devised a novel technique of incremental unloading for determining the internal stress in a material and a method for determining ductile fracture toughness from a simple tensile test. Among the first to recognize and investigate the environmental effects on creep and to observe that in stainless steel, the best creep resistance is obtained in a mildly oxidising atmosphere. Contributed to understanding the damage caused by creep, fatigue, environment and DSA and the interactions and synergism between these different damage mechanisms and to the evolution of the methodology for assessment, prediction and extension of the life of engineering components and plants. In nuclear materials development, the indigenous development of a stainless steel stabilized with titanium having stringent requirement of cleanliness for fuel cladding and wrapper applications for fast breeder reactors has been carried out from laboratory melts at IGCAR, industrial production at Midhani to component fabrication at Nuclear Fuel Complex, Hyderabad. Similar indigenization efforts for extra clean nuclear grade Cr-Mo ferritic steels required for steam generators of fast breeder reactors are also noteworthy. All this has contributed in establishing important correlations between alloy chemistry, processing parameters, microstructures and service performance.

Memberships: Member: Electron Microscope Soc. of India • Fellow: INAE; Indian Inst. of Metals; Indian Inst. of Welding.

Awards & Distinctions: National Metallurgists Day Award 78 • H D Govindaraj Memorial Res. Award 80 • Binani Gold Medal 81 • G D Birla Gold Medal 87 • H D Govindaraj Memorial Research Award 87 • L M Mirchandani Res. Award 88 • VASVIK Award 90 • Lifetime Achievement Award of Indian Inst. of Welding 2006 • IIM Platinum Jubilee Award 2003.

Row, Raghavendra*

Elected: 1934
Specialization: Medicine
Date and Place of Birth: 16 November 1871; Honawar, Mangalore, Karnataka
Parent: Narayan Row
Spouse and Children: Kshama Pandit; one *s*, one *d*
Last Address: 37, New Marine Lines, Fort, Bombay, India
***Deceased:** 14 November 1953

Education: Univ. of Bombay: MBBS 1893; Univ. of London: MD 1898, DSc 1904.

Career: Singhanese Hospital: Hon. Dir. and Consulting Physcian 1938–50; Chair of Pathology 26–31, Grant Med. College 1888–94, Grocers Res. Scholar 98; Univ. College, London: 1894–98.

Scientific Work: Important contributions are the discovery of *Leishmania tropica* as the cause of Cambay Sore and the demonstration, first time in India, its flagellation and the culture to differentiate it from *Leishmania donovani* of Kala Azar in culture; discovery and demonstration for the first time of spirochaete as the cause of rat bite fever in India; isolation of *M. leprae* in culture by symbiosis with *Leishmania donovani*.

Awards & Distinctions: Kauser-i-Hind Gold Medal 12 • Lord Minto Gold Medal 22 • OBE (Military) • Barclay Medal 35.

Roy, Aditya Prasad

Elected: 1993
Specialization: Condensed Matter Physics
Date and Place of Birth: 16 October 1939; Bhagalpur, Bihar
Parents: Sasanka Bhushan Roy and Bimala
Spouse and Children: Banashree; one *s*, one *d*
Address: House No. E-1, RH-IV, Sector 9N, CBD Belapur, Navi Mumbai 400 614, India
Tel. (022) 2757 2715 (R), Mobile: 99202 53215
email: aproy11@gmail.com

Education: Bihar Univ.: BSc Hons 59; BARC Trg School 59–60; Univ. of Bombay: MSc 65; McMaster Univ., Canada: PhD 70.

Career: Atomic Energy Establishment, Bombay: Res. Offr 60–65; McMaster Univ., Canada: Graduate Student 66–70; BARC, Bombay: Sr Sci. Offr 71–92 , Head of Spectroscopy Dn 93–99.

Scientific Work: Participated in neutron beam line research at Apsara and cirus reactors in BARC and subsequently at Chalk River, Canada. Carried out neutron inelastic scattering studies from metals, metallic alloys and molecular solids to elucidate their dynamical properties. Around 1975, initiated a programme on inelastic light scattering from condensed matter which included indigenous development and integration of continous wave lasers, monochromators and detection systems. During 1993–99, directed the programme of setting up of spectroscopic beam lines and research at the synchrotron radiation facilities Indus-1&2.

Important Publications: **(1)** Phonon frequency spectra of Pb and Pb40Tl60 by coherent scattering of neutrons from polycrystalline materials (1970) *Can. J. Phys.* **48**, 1781. **(2)** Experimental evidence of breakdown of simple pseudopotential theory for lattice dynamics of beryllium (1973) *Phys. Rev. Lett.* **30**, 906. **(3)** Resonance Raman scattering in HgTe: TO-phonon and forbidden LO-phonon cross-section near the E1 gap (1989) *Phys. Rev.* **B40**, 12353. **(4)** Multichannel Raman spectroscopy (1992) *Indian J. Pure Appl. Phys.* **30**, 724. **(5)** Spectroscopic research using Indus-1 (1997) *spectroscopy: Perspectives and frontiers*, Narosa Publishing House, New Delhi, p. 312.

Roy, Ashit Baran

Elected: 1989
Specialization: Precambrian Geology; Geology of Indian Shield
Date and Place of Birth: 18 March 1938; Faridpur, Bangladesh
Parents: Bhubhan Mohan Roy and Usha
Spouse and Children: Baruna; two *d*
Address: Flat No. 3/2G, Niloy Apartment, 46A, Ramanath Das Road, Dhakurja Post,
Kolkata 700 031, India
Tel. (033) 2405 3671 (R), Mobile: 94330 87685
email: abroy_g@yahoo.com

Education: Jadavpur Univ.: BSc Hons 59, MSc 61, PhD 65.

Career: Univ. of Rajasthan, Dept of Geology: Lecturer 68–71, Reader 71–84, Prof. 85–87; Mohanlal Sukhadia Univ., Udaipur, Dept of Geology: Prof. 87–98, Emeritus Fellow 98–2002; Postdoc Res. in Ruhr Univ., Germany: Alexander von Humboldt Fellow 75–76; Presidency College, Kolkata, Dept of Geology: Emeritus Sci. & Project Investigator.

Scientific Work: Studied interrelationship between deformation and metamorphism in central Singhbhum, Bihar. Described for the first time presence of superposed folding in the Aravalli rocks of the type area. On the basis of detailed structural mapping around the Udaipur valley, Jhamarkotra and Zawar, elucidated a complex deformation history of the rocks resulting from polyphase folding and shearing. Made fundamental contribution to the evolution of slaty cleavage and crenulation cleavage. Proposed a model of tectonic evolution of the nepheline syenite of Kishengarh. Associated with discovery and dating of the 3.3 Ga old gneisses in Rajasthan. Developed a stratigraphic framework of the Aravalli supergroup. Proposed a tectonostratigraphic model of evolution of the Aravalli basins. Proposed a palaeogeographical and sedimentational model for the development of stromatolitic phosphorite deposits of the Jhamarkotra and Udaipur valley.

Important Publications: **(1)** Evolution of lower proterozoic epicontinental deposits: Stromatolite bearing Aravalli rock of Udaipur, Rajasthan, India (1981) *Precambrian Res.* **14**, 49–74. **(2)** Single zircon evaporation ages constraining the growth of the Archaean Aravalli craton, northwestern Indian shield (1996) *Geol. Mag.* **133**, 3, 333–342. **(3)** *Geology of Rajasthan (Northwest India): Precambrian to recent* (2001) Scientific Publisher (India), Jodhpur 421 p. **(4)** *Fundamentals of Geology* (2009) Narosa Publishing House, 285 p. **(5)** The phanerozoic reconstitution of Indian shield as the aftermath of break-up of the Gondwanaland, *Gondwana Res.* **7**, 2, 387–406.

Memberships: Fellow: INSA 90.

Awards & Distinctions: National Mineral Award 91–92 • Govt of Rajasthan Gold Medal 98 • Geol. Soc. India B Rama Rao Birth Centenary Award 2001.

Roy, Durga Prasad

Elected: 1987
Position: DAE Raja Ramanna Fellow, Homi Bhaba Centre for Sci. Education (TIFR), Mumbai
Specialization: Particle Physics; Astroparticle Physics
Date and Place of Birth: 29 July 1941; Cuttack, Orissa
Parents: Biraja Prasad Roy and Kiran Bala
Spouse and Children: Manika; two *d* (Kaberi, Kalyani)
Address: Homi Bhabha Centre for Science Education (TIFR), V N Purav Marg, Mumbai 400 088, India
Tel. (022) 2555 4712/311 (O), (022) 2789 8101 (R), Mobile: 98672 14673
email: dproy@tifr.res.in, dproy1@gmail.com

Education: Utkal Univ., Orissa: BSc Hons 60; Delhi Univ.: MSc 62; Bombay Univ.: PhD 66.

Career: Univ. of California, USA: Postdoc Res. Assoc. 66–68; CERN, Geneva: Vis. Sci. 68–69; Univ. of Toronto, Canada: Sr Postdoc. Fellow 69–70; Rutherford Lab., UK: SSO/PSO 70–74; Visva Bharati Univ., Bengal: Reader in Phys. 74–76; TIFR, Bombay: Reader, Assoc. Prof., Prof. and Sr Prof. 76–2006, DAE Raja Ramanna Fellow 2006–; Sabbatical at Dortmund, Germany: 84–85; CERN, Geneva: 91–92; Fermilab (USA), California (USA), DESY (Germany) and Durham (UK): 97–98; Valencia (Spain): 2007–08.

Scientific Work: In the eighties, suggested the isolated lepton signature for the top quark, which was widely used in its search at hadron colliders, leading to its discovery at Tevatron. Likewise a missing transverse-momentum signature for the supersymmetric particles, suggested in the eighties, is widely used in the ongoing hadron collider search for these particles at Tevatron and LHC. In the nineties suggested a charged Higgs boson signature in its tau lepton decay channel, using the distinctive tau polarization, which is used in its ongoing search at Tevatron and LHC. In a series of globally acclaimed papers published during 2000–05, analysed the solar neutrino data to finally provide a unique solution to solar neutrino oscillation with precise mass and mixing angle.

Important Publications: **(1)** UA1 single jet events: A possible signal for top particle (1983) *Phys. Rev. Lett.* **50**, 1539. **(2)** Top quark search beyond the W mass at tevatron collider energy (1988) *Z. Phys.* **C39**, 417. **(3)** Signature for gluino production at the antiproton-proton collider (1984) *Phys. Lett.* **B141**, 442. **(4)** The hadronic tau decay signature of a heavy charged higgs boson at LHC (1999) *Phys. Lett.* **B459**, 607. **(5)** Update of the solar neutrino oscillation analysis with the 766 Ty KamLAND spectrum (2005) *Phys. Lett.* **B608**, 115.

Memberships: Fellow; INSA 93; NASI 97.

Awards & Distinctions: Meghnad Saha Award 89 • S N Bose Medal 2007.

Roy, Pradip Ranjan*

Elected: 1983
Specialization: Metallurgy
Date and Place of Birth: 21 July 1936; Sylet Dist, now in Bangaladesh
Parents: Himangshu Roy and Satibala
Spouse and Children: Deepashree; one *d*
Last Address: Radiometallurgy Division, Bhabha Atomic Research Centre, Bombay 400 085, India
***Deceased:** 21 April 1991

Education: Univ. of Calcutta: BE 58; BARC Trg School.

Career: BARC, Bombay: Sci. Offr/Dir, Materials Group/Head, Radiometallurgy Dn 58–91.

Scientific Work: Initiated and guided the plutonium metallurgy programme in India. In fact, was the first Indian metallurgist to handle plutonium in 1960. Under dedicated and dynamic leadership, India had achieved total indigenous capability in plutonium fuel fabrication. Was primarily responsible for fabrication of the plutonium device for the peaceful nuclear explosion experiment carried out at Pokhran. Had provided inspiring leadership to a team of metallurgists and scientists who have developed and produced plutonium oxide, mixed uranium-plutonium oxide (popularly known as MOX), mixed uranium-plutonium monocarbide and mononitride and Al-Pu alloy fuels for nuclear reactors. Was an eminent powder metallurgist.

Memberships: President and Vice President: Powder Metallurgy Assn of India; Res. Council of the Regional Res. Lab • Chmn: CSIR, Bhubaneswar

Awards & Distinctions: Padma Shri 75 • National Metallurgists Day Award 75 • VASVIK Award 86 • Om Prakash Bhasin Award 88.

Roy, Probir

Elected: 1989
Position: DAE Raja Ramanna Fellow, Saha Inst. of Nuclear Physics, Kolkata
Specialization: Particle Physics; Field Theory and Phenomenology
Date and Place of Birth: 4 October 1942; Calcutta
Parents: Kiron Lal Roy and Sujata Kavyatirtha
Spouse and Children: Manashi; one *s*, one *d* (Analabha, Jagoree)
Address: Saha Institute of Nuclear Physics, Block AF, Sector 1, Bidhannagar, Kolkata 700 064, India
Tel. (033) 2337 5445-9/1425 (O), (033) 2359 8896 (R), Mobile: 94325 97896
email: probirr@gmail.com, probir.roy@saha.ac.in; URL: www.theory.tifr.res.in/~probir

Education: Univ. of Calcutta: BSc 62; Univ. of Cambridge: BA 65, MA 68; Stanford Univ., USA: PhD 68.

Career: Cornell Univ., USA: Instructor-Res. Assoc. 68–71; CERN, Geneva: Jr Vis. Sci. 71–72; TIFR, Bombay: Vis. Fellow 72–73, Fellow 73–76, Reader 76–83, Assoc. Prof. 83–90, Prof. 90–93 and Sr Prof. 93–2007; SINP, Kolkata: DAE Raja Ramanna Fellow 2007–.

Scientific Work: Derived an important sum-rule for photon-photon scattering. Other works relate to solution to Thirring model with U (N) symmetry, first natural theory of ultralight Dirac neutrino, constraints from tree unitarity in broken supergravity, oblique corrections in electroweak precision testing as well as signals of very heavy neutrinos. Most recent works comprise collider signals of R-partity violation, probing the deviation from maximal mixing of atmospheric neutrinos, collider discrimination between supersymmetry and large extra dimensions as well as four zero neutrino textures.

Important Publications: **(1)** *Theory and phenomenology of sparticles* (2002) World Scientific. **(2)** *Theory of lepton-hadron processes at high energies* (1975) Clarendon Press, Oxford. **(3)** Tau signals of *R*-parity breaking at LEP 200 (1993) *Nucl. Phys.* **B41**, 67. **(4)** New constraints on lepton nonconserving *R*-parity violating couplings (1996) *Phys. Lett.* **B378**, 153. **(5)** Exact sum-rules for the decay constant of the neutral pion (1974) *Phys. Rev.* **D9**, 2631.

Memberships: Fellow: INSA 92; NASI 2001; American Physical Soc.

Awards & Distinctions: S S Bhatnagar Prize 87 • INSA Royal Soc. Exchange Fellow 94 • Meghnad Saha Lectureship Award 97.

Roy, Rajendra Prasad

Elected: 2009
Position: Staff Sci., NII, New Delhi
Specialization: Synthetic Protein Chemistry; Biological Chemistry
Date and Place of Birth: 26 January 1962; Kolkata
Parents: Ramadhar Roy and Singasani
Spouse and Children: Seema; one s (Amartya)
Address: National Institute of Immunology, Aruna Asaf Ali Marg, New Delhi 110 067, India
Tel. (011) 2670 3698 (O), (011) 2674 1142 (R), Mobile: 98105 77789
email: rproy@nii.res.in

Education: Univ. of Delhi: BSc 82, MSc 84; IISc, Bangalore: PhD 90.

Career: Natl Inst. of Immunology: Staff Sci. 93–; Univ. of Iowa: Vis. Sci. 2001–02; Albert Einstein College of Medicine: Res. Assoc. 89–93; IISc: PhD 84–89; Univ. of Delhi: MSc 82–84.

Scientific Work: Contributions fall in the area of synthetic protein chemistry and structural biology. Developed a novel enzymatic approach, using an unprecedented sortase-catalysed transamidation reaction, for one-pot synthesis of glycoconjugates comprising aminosugars and native proteins. Discovered ways to shift the hydrolysis bias of a protease-catalysed reaction in favour of peptide bond synthesis, and, applied this approach to introduce nonstandard amino acids in haemoglobin for illuminating the role of protein dynamics in sickle hemoglobin fibre assembly. The general principles emanating from work offer rich possibilities in semi-synthesis of proteins and glycoconjugates.

Important Publications: **(1)** Peptide-sugar ligation catalysed by transpeptidase sortase: A facile approach to neoglycoconjugate synthesis (2008) *J. Am. Chem. Soc.* **130**, 2133. **(2)** Volume exclusion effect as a driving force for reverse proteolysis: Implications for polypeptide assemblage in a macromolecular crowded milieu (2002) *J. Biol. Chem.* **277**, 43252. **(3)** An enigmatic peptide ligation reaction: Protease-catalysed oligomerization of a native protein segment in neat aqueous solution (2000) *Protein Science* **9**, 734. **(4)** Linkage of interactions in sickle haemoglobin fibre assembly: Inhibitory effect emanating from mutations in the AB region of the alpha-chain is annulled by a mutation at its EF corner (2004) *J. Biol. Chem.* **279**, 20018. **(5)** A role for alpha113 (GH1) amino acid residue in the polymerization of sickle haemoglobin: Evaluation of its inhibitory strength and interaction-linkage with two fibre contact sites (alpha16/23) located in the AB region of the alpha-chain (2001) *J. Biol. Chem.* **276**, 18209.

Memberships: Fellow: NASI 2001.

Awards & Distinctions: National Bioscience Award for Career Development, DBT, India.

Roy, Suhrid Kumar*

Elected: 1934
Specialization: Geology
Date and Place of Birth: 1 January 1895; Kurulgachi, Nadia Dist, Bengal
Parent: Sayaram Roy
Spouse and Children: Frau Hermine; three s
Last Address: Indian School of Mines, Dhanbad, India
***Deceased:** 16 July 1959

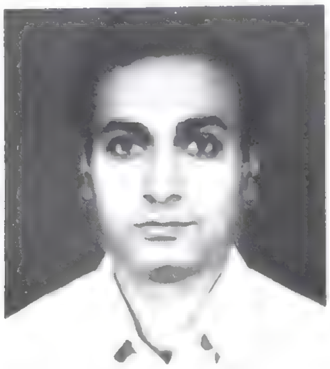
Education: Univ. of Calcutta: BSc 16; Univ. of Zurich, Switzerland: PhD 24.

Career: Forest Dept, Bengal: 18–19; Univ. of Zurich, Switzerland: 20–24; Bandsa State, Bombay: Geologist; Mandi State, Himachal Pradesh: Geologist 24–27; Indian School of Mines, Dhanbad: Prof. and Head of Geology Dept 28–46.

Scientific Work: Research contributions were mainly in petrology and economic geology. While in Switzerland, carried out a detailed petrological study in an area of Hercynian Mountains (Southern Black Forest, Germany) and made a detailed study of the enclaves occurring in the Albtal Granit of the region. Started work on the correlation of sedimentary rocks by means of their heavy mineral assemblages. Conducted a detailed study of heavy minerals of the sandstones associated with the coal seams of Jharia coalfield. In Mandi, studied the geology and mineral resources and in Bandsa prospected for water in the Deccan trap for location of well sites. On the economic geology side, main contribution was on fuel oil from inferior Jharia coals, mica and mica industry of Bihar, mica pegmatites of Kodarma. Took great interest in ore-microscopy.

Memberships: Fellow: INSA 40 • President: Mining and Metallurgical Soc. of India; Geology Sec. of Indian Sci. Congress.

Roy, Shasanka Mohan



Elected: 1983
Position: DAE Raja Ramanna Fellow, JNU, New Delhi
Specialization: Quantum Information; Foundations of Quantum Theory
Date and Place of Birth: 2 September 1941; Maimansingh, Bangladesh
Parents: Murari Mohan Roy and Nivanani
Spouse and Children: Nandita; one *s*, one *d* (Arunabha, Aditi)
Address: DAE Raja Ramanna Fellow, School of Physical Sciences, Jawaharlal Nehru University,
New Delhi 110 067, India
Tel. (011) 2671 7507 (O), (011) 2627 7377 (R), Mobile: 9910465435
email: shasanka1@yahoo.co.in; URL: http://theory.tifr.res.in/~shasanka/

Education: Univ. of Delhi: MSc 62; Princeton Univ., USA: PhD 66.

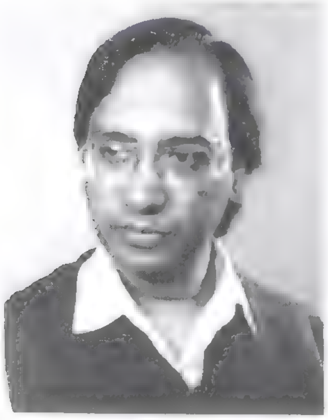
Career: Univ. of California, USA: Postdoc Fellow 66–67; TIFR, Bombay: Fellow 67–72, Reader 72–77, Assoc. Prof. 77-85, Prof. 85–92, Sr Prof. 92–2006; CERN, Geneva: Vis. Sci. 70–71; CEN, Saclay, France: Collaborateur Etranger 71–72; Syracuse Univ., USA: Vis. Prof., JNU, New Delhi: Raja Ramanna Fellow 2006–.

Scientific Work: Derived an exact integral equation for pion-pion scattering, known as Roy's equation; rigorous upper bounds for particle-antiparticle total cross-section differences and multiparticle Bell inequalities (with Virendra Singh); and a lower bound on the bosonic Chandrasekhar mass (with Andre Martin), $M_{cr} \geq 4\,(\sqrt{3Gm})^{-1}$.

Memberships: INSA89; NASI 93; TWAS 2001.

Awards & Distinctions: S S Bhatnagar Prize 81.

Roy, Siddhartha



Elected: 1996
Position: Dir, Indian Inst. of Chemical Biology, Kolkata
Specialization: Structural Biology; Protein-Nucleic Acid Interaction; NMR Spectroscopy
Date and Place of Birth: 1 April 1954; Calcutta, West Bengal
Parents: Amarendra Nath Roy and Aruna
Spouse: Meetra Kar
Address: Indian Institute of Chemical Biology, 4, Raja S C Mullick Road, Kolkata 700 032, India
Tel. (033) 2473 3491 (O), (033) 2412 1261 (R)
email: director@iicb.res.in, siddharatharoy@iicb.res.in

Education: Univ. of Calcutta: BSc Hons 74; Univ. of Delaware: PhD 80.

Career: Brandeis Univ.: Res. Assoc. 80–82; Natl Inst. of Health: Vis. Assoc. 82–84, 84–86; Bose Inst.: Lecturer 86–93, Reader 93–.

Scientific Work: Focus of research may be divided into two broad areas: Structural basis of regulation of transcription; Recognition of tRNAs by aminoacyl-tRNA synthetases. Has used spectroscopic techniques and directed mutagenesis to understand protein-nucleic acid and protein. Studied λ-repressor and gal repressor as models of regulatory behaviour. Shown that loop formation (DNA) can be decomposed into several fundamental processes which are strongly coupled. Attention is focussed on two different but homologous synthetases, glutaminyl and glutamyl. Has shown that ATP has a great influence on tRNA recognition.

Memberships: Member: Guha Res. Conf. • Fellow: INSA 2005.

Awards & Distinctions: Meritorious Service Award • Dept of Health & Human Services, USA.

Roy, Sujit

Elected: 2008
Position: Prof., IIT Kharagpur
Specialization: Organometallic Chemistry; Catalysis for Fine Chemicals; Dual and Bimetallic Catalysis; C-H Functionalization
Date and Place of Birth: 6 June 1959; Darjeeling, West Bengal
Parents: Pramatha Ranjan Roy and Dipali
Spouse and Children: Indira Das; one *d* (Ipsita)
Address: Organometallics & Catalysis Laboratory,
Department of Chemistry, Indian Institute of Technology, Kharagpur 721 302, India
Tel. (03222) 283 338 (O), (03222) 283 339 (R), Mobile: 97329 85077
email: sroy@chem.iitkgp.ernet.in, royiitkgp@gmail.com

Education: North Bengal Univ., Darjeeling: BSc Hons 78, MSc 80; IIT Kanpur: PhD 87.

Career: IIT Kanpur: CSIR Res. Assoc. 87; Univ. of Western Ontario, Canada: Postdoc Fellow 87–90; IICT: Sci. 91–99; Catalysis Res. Centre, Hokkaido Univ., Japan: JICA Intl Participant 98; IIT Kharagpur: Assoc. Prof. 99–2004; Prof. 2004–.

Scientific Work: The research theme of the group is to delve into the organometallic arena, innovate new concepts within the landscape of catalysis for fine chemicals, and address the issues of atom-economy, selectivity, and eco-econo-enantio sustenance. In tandem, the group also works on the diagnosis of intermediates, and mechanistic elucidation of organometallic activation pathways. Discovery of an electrophile-assisted catalytic decarboxylation reaction is a major breakthrough in the 150 year old Hunsdiecker reaction, and is amenable to the synthesis of halostyrenes, haloacetylenes, betalactams, nitro-organics, diorgano-selenides, and NLO-active ferrocenyl polyenes. By working within the portals of dual-reagent/bimetallic catalysis and multi-component coupling approach, has developed selective carbon-carbon, and carbon-heteroatom bond forming pathways within Grignard–Barbier regime, towards pharmaceutically important organic intermediates, and functional metallocenes. In a major on-going effort the group is critically exploring the oscillation between goal and serendipity in the new-found cooperative heterobimetallic catalysis concept for benzylation, allylation, propargylation and related reactions.

Important Publications: **(1)** Dual-reagent catalysis within Ir–Sn domain: Highly selective alkylation of arenes and heteroarenes with aromatic aldehydes (2007) *J. Org. Chem.* **72**, 3100. **(2)** Cooperative Friedel–Crafts catalysis in heterobimetallic regime: Alkylation of aromatics by pi-activated alcohols (2005) *J. Am. Chem. Soc.* **127**, 6162. **(3)** rhodium (I) catalysed carbonyl allenylation versus propargylation via redox transmetallation across tetragonal tin (II) oxide (2004) *Org. Lett.* **6**, 2137. **(4)** A novel halodecarboxylation route to beta-halovinylferrocenes towards the synthesis of all-E stereocontrolled ferrocene capped conjugated push-pull polyenes (2000) *Organometallics* **19**, 1464. **(5)** The first example of a catalytic Hunsdicker reaction: Synthesis of beta-halostyrenes (1997) *J. Org. Chem.* **62**, 199.

Memberships: Life Member: CRSI; MRSI.

Awards & Distinctions: CRSI Bronze Medal 94 • CSIR Young Scientist Award in Chemical Science 80.

Roy, Supriya

Elected: 1986
Specialization: Metallogeny; Ore-Genesis; Ore Mineralogy
Date and Place of Birth: 10 June 1931; Calcutta
Parents: Naresh Chandra Roy and Santi Bala
Spouse and Children: Chitra; one *d* (Suchorita)
Address: 99/5/10, Ballygunge Place, Kolkata 700 019, India
Tel. (033) 2460 5578 (R)
email: srjugeo@rediffmail.com

Education: Calcutta Univ.: BSc Hons 50, MSc 52, DPhil 57, DSc 63.

Career: Jadavpur Univ., Dept of Geological Sci.: Lecturer 59–60, Reader 60–72, Prof. 72–91, Emeritus Prof 92–.

Scientific Work: Research contributions are in the fields of ore-petrology and ore-genesis. Characterized the precambrian manganese ore deposits of India in terms of their mineralogy, geochemistry and genesis and traced the geological environments in which these were formed. Through intensive petrogenetic studies along with others established the behaviour of sedimentary manganese deposits of variable bulk compositions in different P-T conditions of late diagenesis and metamorphism and the relevant petrogenetic grid was constructed. Determined the nature of post-depositional changes within deep sea transition metal-bearing ferromanganese nodules of the Indian Ocean and explained their implications in nodule growth history. The genetic classification established for global manganese deposits has been widely accepted and acclaimed. Also brought out the cause and effect relationship between the evolution of the atmosphere-hydrosphere system and the global metallogeny of sedimentary manganese deposits in different stages of geological history.

Important Publications: **(1)** *Syngenetic manganese formations of India* (1966) Jadavpur Univ **(2)** *Manganese Deposits* (1981) Academic Press. **(3)** Manganese metallogenesis: A review (1988) *Ore Geol. Rev.* **4**, 155–159. **(4)** Genetic diversity of managenese deposition interrestrial geological record (1997) Manganese mineralization: Geochemistry and minerology of terrestrial and marine deposits, *Geol. Soc. London*, **119**, 5–27. **(5)** Sedimentary manganese metallogenesis in response to the evolution of the earth system (2006) *Earth Sci. Rev.* **77**, 273–305.

Memberships: Fellow: INSA 72; Geological Soc. of India; Geological, Mining and Metallurgical Soc. of India; Intl Assn on the Genesis of Ore Deposits .

Awards & Distinctions: Sarat Lal Biswas Medal 62 • Indian Geophysical Union Krishnan Medal 69 • National Mineral Award 69 • S Narayanaswami Award 82 • UGC National Fellow in Geology 82–84 • Asiatic Soc., P N Bose Medal 2002 • Geol. Soc. London, L L Fermor Lecturer.

Roy, Sures Chandra*

Elected: 1936
Specialization: Meteorology; Seismology
Date of Birth: 1 March 1899
Last Address: Colaba and Alibag Observatories, Bombay, India
***Deceased:** 9 December 1970

Education: Calcutta Univ.: MSc; Univ. of London, UK: DSc 26.

Career: India Meteorological Dept: Meteorologist; Colaba and Alibag Observatories, Bombay: Dir, Dir-General; Burma Meteorological Service, Rangoon; Dy Dir General, Administration and Instruments.

Scientific Work: While in charge of the Colaba Observatory, analysed seismograms from Indian observatories. Brought in several new schemes like establishing a network of radio-wind finding stations in India to make more precise observations; installing storm-detecting radars at principal airports; and setting up an improved meteorological organization in Assam, including the Meteorological Centre at Guwahati.

Roy, Tuhin Kumar

Elected: 1974
Specialization: Hydrometallurgy; Fluidization; Mixing
Date and Place of Birth: 1 August 1923; Monghyr, Bihar
Parents: Rakhalraj Roy and Vijayini Devi
Spouse and Children: Silva; three *s*
Address: A-58, Gulmohar Park, New Delhi 110 049, India
Tel. (011) 2686 6713 (R)
email: tuhinsilvaroy@reliancemail.net

Education: Calcutta Univ.: BSc Hons 43, MSc 45; MIT, USA: SM 49, ScD 51.

Career: Chemical Construction Corporation, USA, Metals Res.: Head 51–54; Jadavpur Univ., Calcutta: Prof. & Head 54–56, 58–60; Freeport Mineral Company, USA: Consultant 56–58; Industrial Consulting Bureau, Delhi: Managing Dir 60–63; Sci. Design Co., USA: Sr Executive 63–65; CMDC Ltd, Delhi: Managing Dir 65–89; Okhla Chemicals Ltd, Delhi: Dir 70–90.

Scientific Work: Invented a new process of separating nickel, cobalt and copper from iron, aluminium, manganese and other impurities in ore leach solutions by precipitation with hydrogen sulphide under controlled temperature, pressure and pH. Major contribution in hydrometallurgy was selective precipitation of nickel powder with compressed hydrogen from purified leach solution containing nickel and cobalt.

Memberships: Member: American Inst. of Chemical Engineers • Fellow: IICE; INAE 87.

Awards & Distinctions: Ambrose Congreve Award 83 • H L Roy Memorial Lecture Award 92 • IICE Lifetime Award 2004.

Roy Chaudhury, Sailendranath

Elected: 1974
Specialization: Propulsion; Total Energy; Agro-based Energy; Bio-Diesel Hydrogen Fuel; Integrated Rural Energy for Rural Development
Date of Birth: 2 March 1923
Address: No. 618, 80 Feet Road, 4th Block, Koramangala, Bangalore 560 034, India
Tel. (080) 2553 1593 (R)
email: navuday@vsnl.net

Education: Delhi Univ.: BA Hons; BHU, Varanasi: BSc; Cranfield Inst. of Technol., UK: DCAe.

Career: Air Force, Aircraft Storage Unit: Offr Commanding; Air HQ, New Delhi: Asst Dir (Plans Co-ordination), Technical Dir; DTD & P (Air), New Delhi: Dy Dir (Engines); Gas Turbine Res. Establishment, Bangalore: Dir; Total Energy Systems, Bangalore: Consultant.

Scientific Work: Pioneering work on development of 1700°K, and 2000°K after burning system on Bristol Orpheus 703 engine; design and development of the GTX 37–14U flat rated gas turbine engine; design and development of tubular thrust chamber liquid fuel rocket motor, and its turbo-pump; developed concepts for an advanced technology flat rated straight jet engine in the 10000 lbs thrust class.

Memberships: Fellow: London Royal Aeronautical Soc.

Royds, Thomas*

Elected: 1934
Specialization: Astronomy
Date of Birth: 11 April 1884
Last Address: Solar Physics Observatory, Kodaikanal, India
***Deceased:** 1 May 1955

Education: Univ. of Manchester, UK: DSc 12.

Career: Kodaikanal Observatory: Dir 23; Istanbul: Prof. of Astronomy 42.

Scientific Work: Worked on the periodicities of prominences and their distribution on the solar disc. Carried out a long series of comparative studies between the spectra of laboratory arc lamps and the sun. Detailed investigations of the shift of solar lines between the centre of solar disc and at the limbs are considered significant contributions to solar spectroscopy. Undertook a crucial experiment during the total solar eclipse of 19 June 1936 in Japan where it was found that the differences of shifts for lines of different intensities were maintained right up to totality, and were more than the values predicted by the theory of relativity. Interest in spectroheliograms led to the study of the heights of dark markings on the solar disc, their distribution and changes in orientation with respect to the solar meridian at different heliocentric latitudes and phases of the solar activity. Explained these changes in terms of differential rotation of solar gases.

Memberships: Fellow: Royal Astronomical Soc.; INSA 36.

Rudra, J J*

Elected: 1934
Specialization: Electrical Engineering
Last Address: Department of Electrotechnology, Indian Institute of Science, Bangalore, India
***Deceased**

Education: IISc: MA, College of Technology; Manchester: PhD, AMIEE.

Career: IISc, Bangalore, Dept of Electrotechnology: Lecturer 31; College of Engg, Guindy: Chmn, Electrical Engg Dept 35, Principal.

Scientific Work: An authority on different types of current motors due to detailed investigation.

Awards & Distinctions: MBE.

Rudraiah, Nanjundappa

Elected: 1976
Position: Hon. Prof. UGC-CAS in Fluid Mechanics, Bangalore
Specialization: Fluid Mechanics; Magnetohydrodynamics; Electrodynamics; Stability of Flows
Date and Place of Birth: 10 August 1932; Bellave, Tumkur Dist., Karnataka
Parents: S Nanjundappa and Rudramma
Spouse and Children: Manonmani; one s
Address: UGC-CAS in Fluid Mechanics, Department of Mathematics, Central College Campus,
Bangalore 560001, India
Tel. (080) 2222 0483, (080) 2296 1421 (O), (080) 2676 4356 (R), Mobile: 94483 89763
email: rudraiahn@hotmail.com

Education: Univ. of Mysore: BSc Hons 55, MSc 57; Univ. of Toronto: MA 60; Univ. of Western Ontario, Canada: PhD 64.

Career: Bangalore Univ., Bangalore, Central College: Lecturer 57–59, 64–65, PG Prof. 67–72, Sr Prof. 72–90, Principal, Head of Maths Dept.: 83–90; Univ. of Toronto, Canada, Dept of Maths: Teaching Fellow 59–61; Univ. of Western Ontario, Canada: Teaching Fellow 61–64; Univ. of Mysore, Manasagangotri, Mysore: Reader 65–66; UGC-DSA Centre, in Fluid Mechanics, Dept of Maths: Coordinator 80–90, Dean, Faculty of Sci. 85–87, INSA Sr Sci 95–2001, Hon. Prof 2001–; Tokyo Univ., Japan: INSA-JSPS Sr Fellow 80; Gulbarga Univ., Gulbarga: Vice Chancellor 90–95.

Scientific Work: A new semi-circle theorem in MHD involving new Richardson number has been established. Discovered volve type of effect in the atmosphere. Convection and heat and mass transfer in a porous medium, in magnetic fluids and in an electrically conducting fluid in a single and multicomponent system have been extensively investigated because of their importance in various industrial applications and storing of nuclear waste. Radioactive heat transfer in a porous medium has also been studied. In the study of flow through and past porous media non-Darcy equations involving boundary and inertia effects have been derived and a new slip-boundary condition, now known as Bevers–Joseph–Rudraiah condition has also been derived. In chaotic motion, general numerical algorithms, codes and packages have been developed to solve chaotic behaviour in a highly nonlinear flow in complicated geometrics.

Important Publications: **(1)** Electrohydrodynamic pulsating flow in a pipe in the presence of transverse electric field (2008) *Intl. J. Appl. Math. Eng. Sci.* **2**, 2, 143–156. **(2)** Convective diffusion in steady flow through a tube with a retentive and absorptive wall (2008) *Phys. Fluid* **20**, 073604–1 to 073604–22. **(3)** Electrohydrodynamic pulsatile flow in a channel bounded by porous layer of smart material (2007) *Intl. J. Eng. Sci.* **(4)** The effects of laser radiation, nanostructured smart porous lining and electric field on the control of Rayleigh–Taylor instability at the ablative surface of IFE target (2007) *Int. J. Appl. Math. and Eng. Sci.* **1**, 2, 215–228.

Memberships: Fellow: INSA 78; NASI 78; Inst. of Mathematics and Its Applications, UK • President: ISTAM; Mathematical Section of 76th Indian Sc. Congress Assn.

Awards & Distinctions: Karnataka State Rajyotsava Award for Education 86 • KIT International Fellowship for Foreign Researcher 90.

Sabnis, T S*

Elected: 1935
Specialization: Systematic Botany; Anatomy of Desert Plant; Inheritance in Plants
Last Address: 7/38, Tilak Nagar, Kanpur, India
***Deceased:** 1958

Education: BA Hons, MSc; Univ. of Bombay: DSc 39, IAS.

Career: St. Xavier's College, Mumbai: Asst Prof.; Government of United Provinces: Economic Botanist; Imperial Council of Agr. Res.: Hemp Marketing Offr 30–31; Govt Agr. College, Cawnpori: Principal 41.

Important Publications: **(1)** *Flora of Indus delta* (1927–1929) The Methodist is Publishing House. **(2)** The physiological anatomy of the plants of the Indian desert. Gramineae (1921) *J. Ind. Bot.* **2**, 222–227.

Sachdev, Purushottam Lal*

Elected: 1984
Specialization: Nonlinear Waves; Nonlinear Diffusion; Dynamical Systems Fluid Mechanics; Differential Equations
Date and Place of Birth: 6 January 1937; Pattoki, Lahore Dist, now in Pakistan
Parents: Munshi Ram and Maya Devi
Spouse and Children: Rita; two s
Last Address: Department of Mathematics, Indian Institute of Science, Bangalore 560 012, India
***Deceased:** 14 February 2009

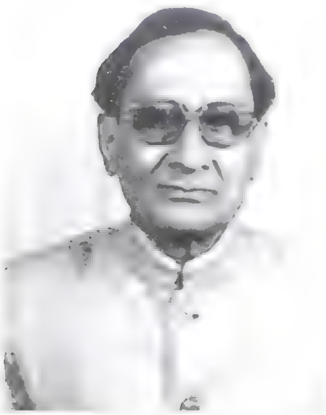
Education: Univ. of Punjab: FSc 55, BA 57; Univ. of Agra: MA 62; IISc, Bangalore: PhD 67.

Career: IISc, Bangalore: Sr Res. Asst 64–66, Lecturer 66–70, Asst. Prof. 72–77, Assoc. Prof. 77–82, Prof. 82–97, CSIR Emeritus Sci. 97–2003, INSA Sr Sci. 2003–08; Univ. of Toronto, Canada: Postdoc Fellow 70–71; Cornell Univ., USA: Res. Assoc. 71–72; New York Univ., USA: Fulbright Scholar 83–84; New Jersey Inst. of Technol., USA: Vis. Prof. 89–90; Royal Inst. of Technol., Sweden: Vis. Prof. 94.

Scientific Work: Gave a uniformly valid analytic theory of blast waves from a point explosion in uniform or non-uniform media. Devised an accurate numerical scheme for nonlinear mixed partial differential equations governing transonic flows with shocks. Discovered a new class of nonlinear ordinary differential equations, called Euler–Painleve transcedents, characterizing generalized Burger's equations in the sense that Painleve transcedents typify Korteweg–de-Vries type of equations. Also gave a new analytic theory for exact description of N-waves for generalized Burger's equations. Exact solutions of classes of nonlinear homogeneous and inhomogeneous partial differential equations with awkward boundary conditions such as shocks and free surfaces were found, which transcend the constraints imposed by self similarity and generally involve solutions of infinite systems of nonlinear ordinary differential equations. These solutions apply to shallow water flows with free surfaces, gasdynamic flows with shocks, atmospheric wave fronts, etc.

Memberships: Fellow: NASI 76; INSA 90.

Sadasivan, Toppur Seethapathy*



Elected: 1945
Specialization: Plant Pathology
Date and Place of Birth: 22 May 1913; Madras
Parents: T Seethapathy and Kanakammal
Spouse and Children: Radha; three *d* (Maya, Sashikala, Vijayasheela)
Last Address: Gokulam, 86/1, M K Amman Koil Street, Mylapore, Madras 600 004, India
***Deceased:** 18 August 2001

Education: Univ. of Madras: BSc 34; Univ. of Lucknow: MSc 36; Univ. of London: PhD 40, DSc 55.

Career: Univ. of Lucknow, Dept of Botany: Demonstrator 40–41; Fruit and Vegetable Preservation Lab., Lyaupur: Microbiologist 41–44; Univ. of Madras, Centre for Advanced Studies in Botany: Dir/Prof. 44–73; CSIR, Plant-based Lab.: Consultant 73–76; Birbal Sahni Lucknow Prof. 77–80; Vidyashram, Kodaikanal: Chmn 82.

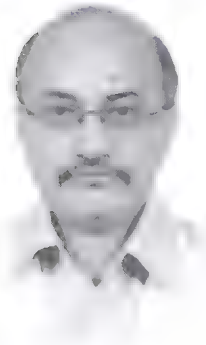
Scientific Work: Worked on model host-parasite systems and followed up the biochemical changes in the host plants as the disease syndrome progressed. While working on the toxin pyriculol produced by this blast fungus demonstrated permeability changes in the host tissues. Furthermore, it was demonstrated for the first time that the toxins of the fungus induced green islands in rice leaf tissues. Work on the cotton wilt problem caused by the soil inhabiting fungus *Fusarium vasinfectum* led to a better understanding of rhizosphere effect where the role of root exudates in promoting the growth and survival of specific pathogens became well established. First ever demonstration of the fungal toxin fusaric acid *in vivo* led to designating this toxin as a vivotoxin and was advanced by the group. Put forward definitive evidence of ionic imbalance in wilted plants in the form of excessive excretion and enhanced transpiration resulting in loss of potassium and accumulation of divalent cations. The other host-parasite system studied was the blast disease of rice caused by the air-borne fungus *Pyricularia oryzae.*

Important Publications: **(1)** Competition in fungi I. A study of the growth reactions of non-parasitic fungi in associated culture (1939) *Proc. Indian Acad. Sci.* **B10**, 1–26. **(2)** Root disease fungi (1945) *J. Indian Bot. Soc.* **24**, 156–166. **(3)** The problem of blast disease of rice (1959) *Proc. Indian Acad. Sci.* **B69**, 1–6. **(4)** Physiology of wilting disease (1961) *Annu. Rev. Pl. Physiol.* **12**, 449–468. **(5)** *Pathological wilting of plants* (1978) Univ. of Madras, pp. 525. **(6)** Three decades in physiological plant pathology (2001) *Phytopathology* (Golden Jubilee issue) pp. 467–475.

Memberships: Fellow: INSA 55; Deutsch Akademie, Germany 60 • President: Indian Bot. Soc. 63–64; Indian Phytopathol. Soc. 64.

Awards & Distinctions: ISCA Birbal Sahni Medal 62 • S S Bhatnagar Prize 62 • Sundar Lal Hora Medal 73 • Padma Bhushan 74.

Sadhale, Parag Prabhakar



Elected: 2009
Position: Assoc. Prof., IISc, Bangalore
Specialization: Molecular Biology, Transcriptional Regulation in Eukaryotes
Date and Place of Birth: 16 June 1960; Mumbai
Parents: Prabhakar Sadhale
Children: one *d* (Ashwini)
Address: Department of Microbiology & Cell Biology, Indian Institute of Science, Bangalore 560 012, India
Tel. (080)2293 2292 (O), (080)6536 4501 (R), Mobile: 99801 68184
email: pps@mcbl.iisc.ernet.in
URL: http://mcbl.iisc.ernet.in/Welcome%20to%20MCBL/Faculty/Parag/Parag.htm

Education: Univ. of Bombay: BSc 80; Univ. of Baroda: MSc 82; Univ. Rochester, USA: PhD 91.

Career: Hindustan Lever Res. Centre: JRF 82–84; Univ. of Rochester: Postdoc Fellow 91–92; Roche Inst. of Mol. Biol., USA: Postdoc Fellow 92–93; IISc, Bangalore: Asst Prof. 95–2003, Assoc. Prof. 2003–.

Scientific Work: One of the major contributions is the genome wide expression profiling studies in a variety of model systems. The laboratory was among first in the country to use microarray technology to analyse transcriptional regulation of stress responses in eukaryotes. In addition, this technology was applied effectively to study transcriptional profiles of the fungal pathogen *Candida albicans* to discover novel virulence factors. Has demonstrated use of ChIP on chip technology to analyse genome wide recruitment of transcription proteins. Has used the microarray technology to study effect of small molecules on chromatin modification and mammalian transcription.

Important Publications: **(1)** Genome wide recruitment analysis of Rpb4, a subunit of Pol II in *Saccharomyces cerevisiae* reveals its involvement in transcription elongation (2008) *Eukaryot. Cell.* **(2)** Unstructured N terminus of the RNA polymerase II subunit Rpb4 contributes to the interaction of Rpb4. Rpb7 subcomplex with the core RNA polymerase II of *Saccharomyces cerevisiae* (2008) *J. Biol. Chem.* **283**, 7, 3923–3931. **(3)** Global analysis of altered gene expression during morphogenesis of *Candida albicans in vitro* (2005) *Biochem. Biophys. Res. Commun.* **334**, 4, 1149–1158. **(4)** Whole genome expression profiles of yeast RNA polymerase II core subunit, Rpb4, in stress and nonstress conditions (2003) *J. Biol. Chem.* **278**, 5, 3339–3346. **(5)** Rpb4, a non-essential subunit of core RNA polymerase II of *Saccharomyces cerevisiae* is important for activated transcription of a subset of genes (2001) *J. Biol. Chem.* **276**, 33, 30641–30647.

Saha, Ajit Kumar*

Elected: 1975
Specialization: Petrology; Geochemistry; Precambrian Geology; Environmental Geology
Date and Place of Birth: 25 May 1925; Patna, Bihar
Parents: Abinas Chandra Saha and Prabhabati
Spouse and Children: Biswabani; one *s*, two *d*
Last Address: Department of Geology, Presidency College, Calcutta 700 073, India
***Deceased:** 27 April 1997

Education: Univ. of Calcutta: BSC (Hons) 45, MSc 47, DPhil 58; Univ. of Toronto, Canada: PhD 58.

Career: GSI: Geological Asst 48–51; Presidency College, Calcutta, Dept of Geology: Asst Prof. 51–62, Prof. 62–90, Emeritus Prof. 91, CSIR Emeritus Sci. 90–93.

Scientific Work: Deciphered the precambrian crustal evolution of the Singhbhum-North Orissa region, discovering 3.7 Ga relics (the oldest known so far in India). Contributions to geochemistry, classification and history of crystallization of the pegmatites and associated granitoids of Bihar Mica Belt. Pioneered the application of statistical techniques to understand the processes involved in genesis of granitic rocks and ore deposits; and also multi-disciplinary research on the environmental problems of Eastern India.

Important Publications: **(1)** *Basin-subbasin inventory of water pollution: The Ganga basin* (1984) Central Water Pollution Control Board, New Delhi. **(2)** *Crustal evolution of Singhbhum, North Oriss* (1994) GSI Memoir, **Vol. 27**. **(3)** *Studies on some problems of atmospheric pollution in southern Bengal* (1985) A Monograph, Centre for Study of Man and Science, Calcutta. **(4)** Geological evolution of Peninsular India: Petrological and structural aspects (1987) *Recent researches in geology* Hindustan Pub. Corpn, New Delhi.

Memberships: Fellow: INSA 68; NASI • Member: Geological Soc. of India; Indian Soc. of Earth Sciences.

Awards & Distinctions: Govt of India National Mineral Award 69.

Sahasrabuddhe, D L*

Elected: 1934
Specialization: Agricultural Chemistry
Date and Place of Birth: 1 September 1880
Last Address: Deccan Gymkhana Colony, Pune 4, India
***Deceased:** 1953

Education: BSc 1907, MAg 21, MSc 21, DSc 36.

Career: Agricultural College, Poona: Demonstrator in Chem. 1905–07, Lecturer 1907–12, Asst Prof. 12–18, Prof. of Chem. and Agri. Chemist 18–36; Nowrojee Wadia College, Pune: Hon. Prof. of Biochem. 37; Bombay Univ.: Member of Faculty 24.

Scientific Work: Work on soils concerned deterioration of cardamom cultivation in North Canara, and fixation and fluctuations of nitrogen in soils of the Bombay Deccan and fixation of atmospheric nitrogen in rice fields when the rice crop is growing. Studied application of fertilizers to rice crops and their effects on the quantity and quality of the yields. In work on plant products, discovered the presence of potassium nitrate in betel vine creepers and studied the bleaching of betel vine leaves. Studied the analysis of various fruits grown in the Bombay Deccan. Analysed the various food grains and their comparative digestibility under various conditions. Studied composition of milk and its variations during lactation period.

Memberships: President: Indian Soc. of Soil Science.

Sahni, Ashok

Elected: 1987
Position: INSA Sr Sci. and Hon. Prof., Panjab Univ.
Specialization: Vertebrate Palaeontology; Palaeobiogeography; Electron Microscope Applications to Biomineralization
Date and Place of Birth: 19 August 1941; Calcutta
Parents: Mulk Raj Sahni and Shyama
Spouse and Children: Neera; one *s*, one *d*
Address: Centre for Advanced Study in Geology, Panjab University, Chandigarh 160 014, India
Tel. (0172) 253 4252 (O), (0172) 271 2253 (R), Mobile: 98720 92828
email: ashok.sahni@gmail.com

Education: Lucknow Univ.: BSc Hons 62, MSc 63; Univ. of Minnesota, USA: PhD 68.

Career: Univ. of Minnesota, USA: Teaching Assoc. 63–68; Lucknow Univ., Geology Dept: CSIR Sci. Pool 68–69, Lecturer 69–76, Reader 76–79; Panjab Univ., Chandigarh, Centre for Advanced Study in Geology: Prof. 79–2001, INSA Sr Sci. and Hon. Prof. 2001–.

Scientific Work: Worked on Himalayan eocene vertebrates, their application in defining collision history of India and Asia and in the reconstruction of tertiary palaeobiogeography; documentation of Indian dinosaur nesting sites, eggshell ultrastructure; biomineralization studies involving recent and calcified fossil tissues; cretaceous and tertiary mammalian biostratigraphy; stratigraphy of Deccan volcano-sedimentary sequences; and cretaceous–tertiary boundary events.

Memberships: Fellow: INSA 92; NASI 97; TWAS 2005; Alexander von Humboldt Foundation; GSI; Palaeontological Soc. of India; Associe Etranger; Geological Soc. of France.

Awards & Distinctions: L Rama Rao Gold Medal 90.

Sahni, Birbal*

Elected: 1934
Specialization: Botany and Palaeobotany
Date and Place of Birth: 14 November 1891; Bhera, Pakistan
Parents: Ruchi Ram Sahni and Ishwari Devi
Spouse: Savitri
Last Address: Institute of Palaeobotany, Lucknow, India
***Deceased:** 10 April 1949

Education: Central College, Lahore: BSc 11; Univ. of Cambridge, UK: BSc 15, ScD 29; Univ. of London, UK: DSc 19.

Career: Banaras Hindu Univ., Varanasi: Prof. of Botany 19–20; Panjab Univ., Lahore: Prof. 20–21; Univ. of Lucknow: Prof. of Botany 21–46, Dean of Faculty of Sc. 33–46; Inst. of Palaeobotany Founder-Dir 46–49.

Scientific Work: Made some original contributions to botany, palaeobotany and geology. Made extensive contributions to the structure and affinities of certain zygopterid ferns. Made a study of Indian Gondwana plants along with A C Seward, describing a number of entirely new fossil plants and revising several old species and their geological ranges. Also investigated the structure and affinities of various Indian fossil plants from Palaeozoic to the Quaternary beds. Founded a new group of fossil gymnosperms – Pentoxylae. Also made improvements in the techniques of studying fossil plants.

Memberships: Fellow: INSA 35; Geological Soc. • Foreign Hon. Member: American Acad. of Arts and Sci., Royal Soc. of London 36 • President: Geology and Botany Sec. of Indian Sc. Congress; Natl Acad. of Sciences.

Awards & Distinctions: Asiatic Soc. Barclay Medal 36 • Numismatic Soc. Nelson–Wright Medal 44 • Cattamanchi Ramalinga Reddy National Prize 47.

Sahni, Girish

Elected: 2001
Position: Dir, IMTECH, Chandigarh
Specialization: Protein Engineering; Molecular Biology; Biotechnology; Enzymology
Date and Place of Birth: 2 March 1956; Delhi, Uttar Pradesh
Parents: O P Sahni and Sarla
Spouse and Children: Chander Kanta; two s
Address: Institute of Microbial Technology, Sector 39-A, Chandigarh 160 036, India
Tel. (0172) 269 0785, (0172) 269 0684 (O), (0172) 269 0550 (R), Mobile: 98883 71548
email: director@imtech.res.in

Education: Panjab Univ.: BSc Hons 76, MSc Hons 78; IISc, PhD 84.

Career: Univ. of California, USA: Postdoc Trainee 84–86; Rockefeller Univ., Albert Einstein College of Medicine, USA: Adjunct Faculty & Sr Res. Assoc. 86–88; Albert Einstein Coll., New York: Sr Res. Assoc. 87–91; Inst. of Microbial Tech.: Sr Sci. 91–; Dir 2005–.

Scientific Work: Contributed extensively in the area of cardiovascular drugs especially clot blusters and their mode of action in the human body. Responsible for producing India's first indigenous clot bluster drug called streptokinase (now being marketed by Cadila Pharmaceuticals Ltd., Ahmedabad under the brand name STPase). Recently, developed a novel life-saver drug (clot-specific streptokinase) which is likely to benefit patients of cardiovascular diseases worldwide, now undergoing regulatory approval process.

Important Publications: **(1)** Mapping of the plasminogen binding site of streptokinase with short synthetic peptides (1997) *Protein Sci.* **6**, 6, 1284–1292. **(2)** Role of the amino-terminal region of streptokinase in the generation of a fully functional plasminogen activator complex probed with synthetic peptides (1998) *Protein Sci.* **7**, 3, 637–648. **(3)** Function of the central domain of streptokinase in substrate plasminogen docking and processing revealed by site-directed mutagenesis (1999) *Protein Sci.* **8**, 12, 2791–2805. **(4)** Involvement of a nine-residue loop of streptokinase in the generation of macromolecular substrate specificity by the activator complex through interaction with substrate kringle domains (2002) *J. Biol Chem.* **277**, 15, 13257–13267. **(5)** Domain truncation studies reveal that the streptokinase-plasmin activator complex utilizes long range protein-protein interactions with macromolecular substrate to maximize catalytic turnover (2003) *J. Biol. Chem.* **278**, 33, 30569–30577. **(6)** Role of the 88–97 loop in plasminogen activation by streptokinase probed through site-specific mutagenesis (2008) *Biochim. Biophys. Acta* **1784**, 9, 1310–1318.

Memberships: Fellow: NASI 2001; Guha Res. Conf.

Awards & Distinctions: National Biotechnology Product Development Award 2002 • CSIR Technology Shield 2001–02 • VASVIK Award 2000 • Young Scientist Travel Awards of the Protein Soc., USA • Ranbaxy Award 2003.

Sahney, J C*

Elected: 1938
Specialization: Hydrodynamics
Parent: Ladha Ram Sahney
Last Address: IV Circle, UP Public Works Department, B/R Branch, 95 Gwalior Road, Agra, India
***Deceased:** 2 March 1954

Education: Sheffield Univ., UK: BE.

Career: PWD, Gonda, UP: Asst Engineer, Superintending Engineer.

Memberships: Fellow: Geological Soc. of India, Meteorological Soc. of London.

Sahni, Mulk Raj*

Elected: 1934
Specialization: Geology; Palaeobotany
Date and Place of Birth: 1 March 1899; Bhera, now Pakistan
Parents: Ruchi Ram Sahni and Ishwari Devi
Spouse and Children: Shyama; one *s*, two *d*
Last Address: 98, Mahatma Gandhi Marg, Lucknow 226 011, India
***Deceased:** 13 January 1983

Education: Univ. of London, UK: PhD, DSc; Univ. of Cambridge, UK: ScD.

Career: Imperial College of Sci. & Technol., London: Palaeontologist 23–29; Geological Survey of India: Superintending Geologist, Palaeontologist, Dy Dir, Acting Dir 29–58; Panjab Univ., Chandigarh: Prof. and Head of Geology 58–64, Hon. Prof. 64–83.

Scientific Work: Major contributions relate to morphology and zonal distribution of the British chalk terebratulids; brachial apparatus of the British chalk terebratulids; evolutionary studies on jurassic and cretaceous terebratulids; mesozoic brachipods of Baluchistan; discovery of *Eurydesma* and *Conularia* from eastern Himalaya; discovery of a cretaceous nautiloid mandible from South India; discovery of *Graptolites* from Kashmir, etc. Carried out field work in Shan State, Myanmar. Investigated the mineral deposit of Sind.

Important Publications: (1) Monograph on *Terebratulidae of the British Chalk* (1929) Paleontological Society of London.

Memberships: Fellow: INSA 50 • President: Palaeontological Soc. of India; Geology Sec. of Indian Sci. Congress.

Sahni, Ruchi Ram*

Elected: 1934
Specialization: Meteorology; Nuclear Physics
Date and Place of Birth: 5 April 1863; Dehra Ismail Khan, Pakistan
Parents: Karam Chand Sahni and Gulab Devi
Spouse and Children: Ishwari Devi; five *s*, four *d*
Last Address: 22, Rattigan Road, Lahore
***Deceased:** 3 June 1948

Education: Panjab Univ., Lahore: BSc 1884, Calcutta Univ.: MA 1889.

Career: Meteorological Dept, GOT: Asst Reporter 1885–87; Government College, Lahore: Asst Prof., Sr Prof. 1887–1918.

Scientific Work: Worked in the laboratory of E Rutherford, FRS around 1914. Published papers on the photographic action of alpha, beta and gamma rays and the scattering of alpha particles by gases. One of the major achievements was the creation of scientific awareness amongst the common people of Punjab through public lectures. Established a sulphuric acid factory near Lahore. Was involved with the formulation of certain laws between the solubilities of various compounds and their other contents, atomic weight being one of them.

Sahni, Varun Bhisham

Elected: 2003
Position: Prof., IUCAA, Pune
Specialization: General Relativity and Gravitation; Cosmology: Dark Matter and Dark Energy; Formation of Galaxies; Superclusters and Voids; The Cosmic Microwave Background; Extra dimensions
Date and Place of Birth: 1956; Delhi
Parents: Bhisham Sahni and Sheila
Spouse and Children: Rohini Bhat; one *s* (Bhrigu)
Address: Inter-University Centre for Astronomy & Astrophysics, Post Bag 4, Ganeshkhind,
Pune 411 009, India
Tel. (020) 2560 4112 (O), (020) 2560 4406 (R)
email: varun@iucaa.ernet.in

Education: Univ. of Delhi: BSc 76; Moscow State Univ.: MSc 81, PhD 85.

Career: Univ. of New Castle upon Tyne, UK, Res. Asst 85–87; Canadian Inst. for Theoretical Astrophysics, Canada: Postdoc Fellow 87–90; IUCAA: Faculty Member 91–.

Scientific Work: Derived a closed form for the spectral density of relic gravity waves originating during Inflation and showed how the gravity wave density depended upon Inflationary parameters and the post-inflationary equation of state of matter. Also demonstrated that both gravity waves and density perturbations originating during Inflation created fluctuations in the cosmic microwave background. Developed new statistical methods of analysing large scale structure and applied these to galaxy catalogues and N-body simulations. Proposed new models of dark energy and dark matter which could help provide a theoretical foundation to the recent observational discovery that the Universe is accelerating. Also developed new statistical techniques to differen tiate different models of dark energy using observational data. Discovered unified models of Inflation and dark energy based on extra dimensions. In these models, an early Inflationary stage and late time acceleration are both sourced by the same physical process.

Important Publications: **(1)** Energy density of relic gravity waves from inflation (1990) *Phys. Rev.* **D42**, 453. **(2)** Shapefinders: A new shape diagnostic for large scale structure (1998) *Astrophys. J. Lett.* **495**, L5. **(3)** A new cosmological model of quintessence and dark matter (2000) *Phys. Rev.* **D62**, 103517. **(4)** Reconstructing the cosmic equation of state from supernova distances (2000) *Phys. Rev. Lett.* **85**, 1162. **(5)** Braneworld models of dark energy (2003) *J. Cosmol. Astropart. Phys.* **11**, 014.

Memberships: Fellow: NASI 98.

Awards & Distinctions: Hari Om Ashram Prerit Vikram Sarabhai Award 99 • S S Bhatnagar Prize for Physical Sciences 2000.

Saidapur, Srinivas Kishanrao

Elected: 1993
Position: Vice Chancellor, Karnataka Univ., Dharwad
Specialization: Biology of Reproduction; Comparative Endocrinology; Herpetology; Animal Behaviour
Date and Place of Birth: 7 March 1947; Saidapur
Parents: Kishanrao and Padmavati
Spouse and Children: Aruna; one *d* (Shobha)
Address: Karnatak University, Dharwad 580 003, India
Tel. (0836) 244 8600 (O), (0836) 277 8650 (R), Mobile: 96633 78259, 9448 853875
email: saidapur@gmail.com

Education: Karnatak Univ., Dharwad: BSc 67, MSc 69, PhD 74.

Career: Karnatak Univ., Dharwar, Dept of Zoology: Demonstrator 72–76, Lecturer 76–82, Reader 82–88, Prof. 88–, Vice Chancellor 2006–; Population Council, Biomed. Dn, NY: Postdoc Fellowship 76–77; Univ. of Kansas: Ford Foundation Fellowship 77–79; Anatomisches Inst., Johannes Gutenberg Univ., Germany: Alexander von Humboldt Fellowship 89–90; Natl Inst for Basic Biology, Japan: Vis. Sci. 98–99.

Scientific Work: Has elucidated dynamics of ovarian follicular development, follicular atresia, luteal function, origin of interstitial gland cells, steroidogenesis, sex reversal, making significant contribution to our understanding of hormonal and environmental control of reproduction in Indian anurans. In recent years, studied behavioural ecology of anuran tadpoles and lizards. Studies have elucidated kin recognition, predator–prey relations, ideal free distribution during foraging, mechanism of kin and food detection, etc., in anuran tadpoles and, several reproductive strategies shedding new light on reproductive ecology of the Indian lizards. These include phenomena of prolonged egg retention, manipulation of egg and clutch sizes in relation to season, and language of communication among the conspecifics in agamid lizards.

Important Publications: **(1)** Steroid synthesizing cellular sites in the amphibian ovary. A histochemical study (1974) *Gen. Comp. Endocrinol.* **22**, 459–462. **(2)** Structure and function of the postovulatory follicles (corpora lutea) in the ovaries of non mammalian vertebrates (1982) *Int. Rev. Cytol.* **75**, 243–285. **(3)** Effect of sex steroids on gonadal differentiation and sex reversal in the frog, *Rana curtipes* (2001) *Gen. Comp. Endocrinol.* **124**, 115–123.

(4) The ontogeny of kin recognition in tadpoles of the toad *Bufo melanostictus* (Anura: Bufonidae) (2000) *J. Biosci.* **25**, 267–273. **(5)** The language of lizards: Interpreting the function of visual displays in the Indian rock lizard, *Psammophilus dorsalis* (Agamidae) (2006) *J. Ethol.* **24**, 275–283.

Memberships: Fellow: Zoological Soc. of India; INSA 94; TWAS 2010; Soc. for Study of Amphibians and Reptiles, USA.

Awards & Distinctions: S S Bhatnagar Prize 91 • INSA M R N Prasad Memorial Lecture Award 2007 • Hon. Col. 2008.

Salaskar, Vishwanath Hari*

Elected: 1974
Specialization: Medical Enzymology; Serology
Date and Place of Birth: 6 April 1912; Malvan, Maharashtra
Parents: Hari and Satyavati
Spouse and Children: Leela; one *s*, one *d*
Last Address: 69-A, Manisha, Lady Jagmohandas Marg, Neapean Sea Road, Bombay 400 006, India
***Deceased:** 8 September 1997

Education: Univ. of Bombay: MBBS 38, MD 47.

Career: Grant Med. College: Dept of Pathol. and Bacteriol. House Physician 38–40, Teacher 44–56.

Scientific Work: Work on enzyme and clinical medicine, infectious hepatitis and influenza in cerebrospinal fluid is well recognized and documented. Studied 100 consecutive post-mortems in a teaching hospital.

Memberships: Member: Indian Medical Assn; Assn of Pathologists and Microbiologists of India; Senate of Univ. of Bombay • Fellow: College of Physicians and Surgeons of Bombay 50; Maharashtra Medical Council • President: Bombay Med. Congress; Soc. of Hon. Metropolitan Magistrates; Indian Med. Assn.

Awards & Distinctions: B C Roy National Award 72 • Raj Kumari Amrit Kaur Gold Medal of Red Cross 80 • Vasantrao Prathisthan Award • Padma Shri 81 • Dhanwantari Award 92.

Saldanha, Cecil John*

Elected: 1980
Specialization: Angiosperm Taxonomy; Floristics; Ecology; Environment
Date and Place of Birth: 27 December 1926; Bandra, Bombay
Parents: Aloysius Joseph Isaac Saldanha and Mary Emily
Last Address: Centre for Taxonomic Studies, St. Joseph's College, Bangalore 560 001, India
***Deceased:** 7 April 2002

Education: Gregorian Univ., Rome: Licentiate in Philosophy 52; Bombay Univ.: BSc Hons 54, PhD 64; Inst. Sup. de Theologic, Bombay: STL 59.

Career: St. Xavier's College, Bombay: 60–63; St. Joseph's Coll., Bangalore, Dept of Botany: Asst Prof. 64–67, Reader 67–68, Res. Director 68–73, Prof. and Principal 72–82; Centre for Taxonomic Studies: Founder Dir 75–77; IISc, Bangalore, Centre for Ecological Sci.: Prof.

Scientific Work: Distinguished for work on angiosperm taxonomy and floristics. Monographic study of the Scrophulariaceae and studies of South Indian orchids is notable. Flora of Hassan District, Karnataka is an outstanding piece of work and a result of a collaborative programme with Smithsonian Institution, USA. Flora of Karnataka is a project sponsored by the Department of Science and Technology, Govt of India.

Important Publications: **(1)** *A punched card key to the dicot families of South India* (1975) Centre for Taxonomic Studies, Bangalore, 17 pp. **(2)** *Flora of Hassan District* (1976) America Publications, New Delhi. **(3)** *Flora of Karnataka* - Vols I&II (1984, 1994) DST, New Delhi. **(4)** *Andaman, Nicobar and Lakshadeep* (1989) EIA, Oxford & IBH, New Delhi.

Awards & Distinctions: Karnataka Rajyotsava Award for Ecology 84 • Govt of Karnataka Parisara Prashasti Award 92.

Salunke, Dinakar Mashnu

Elected: 2001
Position: Sci., NII, New Delhi
Specialization: Structural Biology; Macromolecular Crystallography; Immunology
Date and Place of Birth: 1 July 1955; Hindalga, Belgaum, Karnataka
Parents: Mashnu G Salunke and Parvati
Spouse and Children: Madhuri; one *d* (Kaanchan)
Address: National Institute of Immunology, Aruna Asaf Ali Marg, New Delhi 110 069, India
Tel. (011) 2670 3686; (011) 2671 7113 (O), (011) 2671 7114 (R)
email: dinakar@nii.res.in; URL: http://www.nii.res.in/~dinakar/

Education: Karnatak Univ.: BSc 76, MSc 78; IISc: PhD 83.

Career: IISc: Res. Assoc. 83–85; Brandeis Univ., USA: Res. Assoc. 85–88; NII: Principal Sci. Offr and Staff Sci 88.

Scientific Work: Understanding the self-nonself discrimination in terms of physicochemical principles of molecular interactions has been a major focus of research. Work on the pluripotency of primary immune response led to discovering new ways of antibody degeneracy and has impacted the evolving paradigm shift in immune recognition and generation of antibody repertoire. Analysed how immune system reacts when encountered with the antigens that keep changing shape and showed that the restricted paratope conformational repertoire on binding of an antigen to multiple independent antibodies may be relevant for minimizing possibility of self-reactive antibodies. Addressing molecular insights into the functional mimicry, demonstrated how paratope plasticity facilitates molecular mimicry of otherwise unrelated antigens. Analyses of carbohydrate-peptide mimicry provided important conceptual leads towards design and development of new generation of vaccines.

Important Publications: **(1)** Paratope plasticity in diverse modes facilitates molecular mimicry in antibody response (2007) *J. Immunol.* **178**, 7923. **(2)** Differential epitope positioning within the germline antibody paratope enhances promiscuity in the primary immune response (2006) *Immunity* **24**, 429. **(3)** Plasticity within the antigen combining site may manifest as molecular mimicry in the humoral immune response (2004) *J. Immunol.* **173**, 7358. **(4)** Epitope recognition by diverse antibodies suggests conformational convergence in an antibody response (2002) *J. Immunol.* **168**, 2371. **(5)** Topological analysis of the functional mimicry between a peptide and a carbohydrate moiety (1997) *J. Biol. Chem.* **272**, 5539.

Memberships: Fellow: NASI 95; INSA 2004.

Awards & Distinctions: National Bioscience Award 99 • S S Bhatnagar Prize 2000 • Prof. R C Shah Memorial Award 2000 • Ranbaxy Research Award 2002 • J C Bose National Fellowship Award 2007 • S K Mitra Birth Centenary Award 2008.

Samanta, Anunay

Elected: 2003
Position: Prof., Univ. of Hyderabad
Specialization: Photochemistry; Time-resolved Spectroscopy; Physical Chemistry of Ionic Liquids
Date and Place of Birth: 16 January 1956; Gushkara, West Bengal
Parents: Nihar Ranjan Samanta and Mira Rani
Spouse and Children: Sonali Samanta; one *s* one *d*
Address: School of Chemistry, University of Hyderabad, Gachi Bowli, Hyderabad 500 046, India
Tel. (040) 2313 4813, (040) 2301 1594 (O), (040) 2301 0715 (R), Mobile: 94404 99681
email: assc@uohyd.ernet.in, anunay-s@yahoo.com; URL: http://202.41.85.161/~as/

Education: Burdwan Univ.: BSc Hons 76, MSc 78; Jadavpur Univ.: PhD 87.

Career: Radiation Lab, Notre Dame, USA: Postdoc 87–89; Univ. of Hyderabad: Lecturer 90–93, Reader 93–2001; Prof. 2001–.

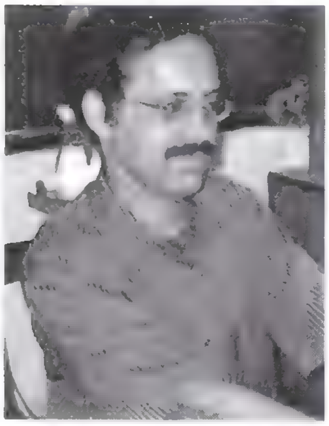
Scientific Work: Contributions include elucidation of the mechanism of nonradiative deactivation process in donor-acceptor molecules, formulation of novel design strategy for the development of 'off-on' fluorescent signalling systems for transition metal ions, and characterization of the room temperature ionic liquids through photophysical studies. First to experimentally demonstrate that intersystem crossing can occur from a higher excited state of molecules. Has pioneered a 'fluorophore design logic' based signalling strategy, which led to the development of structurally simple and yet highly efficient fluorosensors for the transition metal ions. Also the first to demonstrate slow solvation dynamics and red-edge effect in room temperature ionic liquids.

Important Publications: **(1)** Excitation wavelength dependent fluorescence behaviour of some dipolar molecules in room temperature ionic liquids (2004) *J. Phys. Chem.* **B108**, 9048. **(2)** Solvation dynamics of Coumarin-153 in a room temperature ionic liquid (2002) *J. Phys. Chem.* **A106**, 4447. **(3)** How important is the quenching influence of the transition metal ions in the design of fluorescence PET sensors (1998) *Chem. Phys. Lett.* **290**, 9. **(4)** Photophysical and dynamic NMR studies on (4)-amino-7–nitrobenz-2–oxa-1, 3-diazole derivatives: Elucidation of the nonradiative deactivation pathway (1998) *J. Phys. Chem.* **A102**, 7903. **(5)** Modulation of metal–fluorophore communication to develop structurally simple fluorescent sensors for transition metal ions (1997) *J. Chem. Soc. Chem. Commun.* **11**, 1037.

Memberships: Fellow: NASI 2006; INSA 2009; Chemical Research Soc. of India; Indian Photobiology Soc.; Indian Soc. for Radiation and Photochemical Sci.

Awards & Distinctions: Raja Ramanna Fellowship • CRSI Bronze Medal.

Sampath, Srinivasan



Elected: 2009
Position: Prof., IISc, Bangalore
Specialization: Interfacial Electrochemistry; Nanostructured Materials; Fuel Cells and Supercapacitors; Electrochemical Sensors
Date and Place of Birth: 25 May 1961; Cuddalore, Tamil Nadu
Parents: R Srinivasan and Vedavalli
Spouse and Children: Hiranmayi V; one *s*, one *d* (Pradhyumna, Shritha)
Address: Department of Inorganic and Physical Chemistry, Indian Institute of Science,
Bangalore 560 012, India
Tel. (080) 2293 3315 (O), (080) 2351 1974 (R), Mobile: 98862 70646
email: sampath@ipc.iisc.ernet.in; URL: http://ipc.iisc.ernet.in/sampath.html

Education: Madurai Kamaraj Univ.: BSc 81; Univ. of Madras: MSc 83; IIT Madras: PhD 91.

Career: Coromandel Prodorite, Madras: Res. Asst 83–84; IIT Madras: JRF 84–87, Postdoc 91–92; Osaka Univ., Japan: Postdoc Res. 92–94; Hebrew Univ., Israel: Postdoc Res. 94–97; IISc: Asst Prof. 97–2003; Assoc. Prof. 2003–2009; Prof. 2009–.

Scientific Work: Has made important and significant contributions in the area of interfacial and electrochemistry. Work has led to a better understanding of the electrochemical interface involving novel materials such as functionalized exfoliated graphite, titanium nitride, self assembled monolayers, Langmuir–Blodgett films, nanobimetallic particles and composites. Work has also led to the development of new electrochemical biosensors based on molecular recognition, capable of functioning under physiological conditions. Importance of work has been highlighted in international scientific forums and journals. Has also been active in the development of new supercapacitor and fuel cell–electrochemical power sources. These are particularly relevant in the context of developing energy systems that can be indigenously manufactured.

Important Publications: **(1)** High performance platinized titanium nitride for methanol oxidation (2008) *Chem. Commun.* 67. **(2)** Adsorption of zein on surfaces with controlled wettability and thermal stability of adsorbed zein films,

(2007) *Macromolecules* **8**, 7, 2120. **(3)** Spectroscopic and spectroelectrochemical characterization of acceptor-sigmaspace-donor monolayers (2006) *Langmuir* **22**, 7, 3396. **(4)** Self assembly of acceptor-sigma space-donor monolayers: Preparation and electrochemical characterization (2006) *Langmuir* **22**, 7, 3388. **(5)** Alternating current conducitivity and spectroscopic studies on sol-gel derived, trivlalent ion containing silicate-tetra (ethylene glycol) based composites (2005) *Macromolecules* **38**, 1, 134.

Awards & Distinctions: CRSI Medal 2005 • S S Bhatnagar Prize 2006 • MRSI Medal 2006.

Sampathkumaran, Echur Varadadesikan

Elected: 1998
Position: Sr Prof., TIFR, Mumbai
Specialization: Magnetism; Superconductivity; Geometrical Frustration
Date and Place of Birth: 6 December 1954; Kavanur, Tamil Nadu
Parents: E S Varadadesikan and E V Janaki
Spouse and Children: S Sujatha; two s (Sriram, Anuj)
Address: Department of Condensed Matter Physics and Materials Science,
Tata Institute of Fundamental Research, Homi Bhabha Road, Mumbai 400 005, India
Tel. (022) 2278 2437, 2278 2439 (O), (022) 2280 4977 (R)
email: sampath@mailhost.tifr.res.in

Education: Madras Univ.: BSc 74; Annamalai Univ.: MSc 76; Univ. of Bombay: PhD 82.

Career: TIFR: Fellow 85–89, Reader 89–95, Assoc. Prof. 95–99, Prof. 99–2008, Sr Prof. 2008–.

Scientific Work: Has been focussing his studies in the area of strongly correlated electron systems (SCES). Discovered many novel fluctuating-valent rare-earth systems, Kondo lattices, and geometrically frustrated magnetic oxides with interesting characteristics, apart from some superconductors. Addressed many issues in this field with a variety of experimental methods. Recently reported puzzling (and theoretically challenging) minima in the temperature dependence of electrical resistance in the paramagnetic state and large magnetoresistance anomalies in metallic environment even for those rare-earths which have been considered 'normal'. In addition is probing SCES phenomenon in nanoform of rare-earth intermetallics as well as of geometrically frustrated oxides.

Important Publications: **(1)** A new and unique Eu-based mixed valence system: $EuPd_2Si_2$ (1981) *J. Phys.* **C14**, L237. **(2)** Valence fluctuation and the temperature dependence of copper nuclear quadrupole interaction in $EuCu_2Si_2$ and $YbCu_2Si_2$ (1979) *Phys. Rev. Lett.* **43**, 1189. **(3)** Evidence for 4*f*-ligand dehybridization in evolution of heavy fermion behaviour in the series $CeCu_2$-xNixSi$_2$ (1986) *Phys. Rev. Lett.* **56A**, 2861. **(4)** Magnetic frustration in the stoichiometric spin-chain compound, Ca_3CoIrO_6 (2003) *Phys. Rev.* **B67**, 180404 (R). **(5)** Room temperature soft ferromagnetism in the nanocrystalline form of YCo_2, a well-known bulk Pauli-paramagnet (2008) *Appl. Phys. Lett.* **92**, 255247.

Memberships: Fellow: NASI 99; INSA 2002 • Member: Asia-Pacific Acad. of Materials 2009.

Awards & Distinctions: IASc Assoc. 87–89 • INSA Medal for Young Scientists 86 • MRSI Award 96 • S S Bhatnagar Prize 99 • J C Bose National Fellowship 2008.

Sampathkumaran, Mandayam Ananthanpillai*

Elected: 1934
Specialization: Botany
Date and Place of Birth: 15 July 1882; Melkote, Srirangapatnam, Mysore
Parents: M A Alwar Swamy and Yadugiriamma
Spouse and Children: Singamma; four *s*, five *d*
Last Address: Central College, Bangalore, India
***Deceased:** 15 December 1944

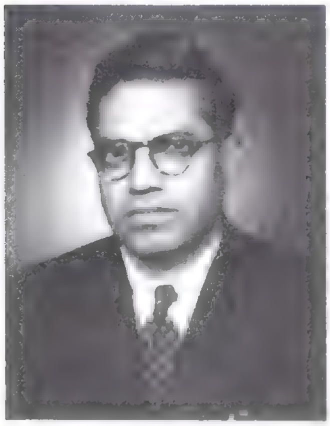
Education: Univ. of Madras: BSc 2009; Univ. of Chicago: PhD 17.

Career: Central College, Bangalore, Dept of Botany: Demonstrator 10–15, Asst Prof. 19–23, Prof. 23–41.

Scientific Work: Besides being an excellent technician in cytology and morphology of higher plants, was a very good technician in other groups of plants also. Established an important school of research in plant cytology and morphology in Bangalore.

Memberships: President: Botany Sec. of Indian Sci. Congress.

Samuel, Gnanabishagam*



Elected: 1942
Specialization: Tuberculosis
Date and Place of Birth: 26 May 1898; Madura, Madras Province
Last Address: No. 8, Ramaswamy Street, Tambaram West, Madras 600 045, India
***Deceased:** 1975

Education: Univ. of Maharashtra: LCPS 25; Univ. of Madras: MBBS 37; Univ. of Bombay: FCPS.

Career: Ordinance Dept, Kirkee: Stenographer 17–18; Miraj Med. School: Lecturer in Pharmacology 25; Wanlesswadi Tuberculosis Sanatorium: Assoc. 31–40, Med. Superindent 40; Sashikala Tuberculosis Sanatorium, Maharastra: Med. Superintendent.

Scientific Work: Worked on the treatment of tuberculosis empyeme, early diagnosis and treatment of pulmonary tuberculosis, bilateral thoracoplasty, the relative relaxation and closure of cavities situated in the apices and sub-clavicular regions of the lungs after producing temporary phrenic paralysis. Other unpublished studies include treatment of infected extrapleural pneumothorax pockets with sinuses, tuberculous cavities, their pathology and their treatment by aspiration methods.

Memberships: Hon. Fellow: College of Physicians & Surgeons.

Awards & Distinctions: Kausar-i-Hind Medal 45.

Samuel, R*

Elected: 1934
Last Address: Department of Physics, Muslim University, Aligarh
***Deceased**

Education: PhD.

Career: Muslim Univ., Aligarh: Chmn, Dept of Physics.

Sane, Prafullachandra Vishnu

Elected: 1987
Position: Principal Adviser, Agri Biotech R&D, Jain Irrigation System Ltd. Jalgaon, Maharastra
Specialization: Plant Biochemistry; Photosynthesis; Plant Molecular Biology
Date and Place of Birth: 24 December 1937; Chiplun, Maharashtra
Parents: Vishnu J Sane and Indira
Spouse and Children: Suchitra; two s (Aniruddha, Sanjay)
Address: C-739/B, Sector C, Mahanagar Extension, Lucknow 226 006, India
Tel. (O), (0522) 237 2201, (0522) 233 0989 (R)
email: rajsane@hotmail.com, saneraj@rediffmail.com

Education: Univ. of Nagpur: BSc 58, MSc 60; Univ. of Alberta, Canada: PhD 68.

Career: Indian Bureau of Standards, New Delhi: Asst Dir 61–64; Univ. of Alberta, Canada: Commonwealth Scholar 64–68; Univ. of California, USA: Postdoc 68–71; European Molecular Biology Org., Germany: Guest Sci. 71; BARC, Bombay: Sci. and Head Agr. Biochem. Dn 72–83; Natl Botanical Res. Inst., Lucknow: Dir 83–97, Emeritus Sci. 98–; Ruhr Univ. and Regensburg Univ., Germany: Alexander von Humboldt Foundation Fellow 79–80.

Scientific Work: Made major and significant contributions to the understanding of structure and functional relationship of the chloroplast membrane using biochemical, biophysical and ultrastructural techniques. Organized a group in BARC working on temperature induced light emission from chloroplast membranes that brought the group international recognition. These studies provided evidence for the participation of charge pairs involving the reduced acceptors and oxidized donors of photosystem II in producing the emitted light. Studies on the enzymes of C_4 plants explained the photosynthetic efficiency of the malate formers. At the National Botanical Research Institute organized research on plant biochemistry, molecular biology and biotechnology. The tobacco transgenic expressing the trypsin inhibitor stably over 5 generations was one of the first transgenics produced and published from India. Established the Centre for Plant Molecular Biology at NBRI with the support of DBT and CSIR and coordinated the National Multi-Institutional Transgenic Cotton Project of DBT. His group suggested a possible mechanism for the male sterility in *Sorghum* besides sequencing a large number of chloroplast genes from *Populus*.

Important Publications: **(1)** Distribution of function and structure in chloroplast lamellae (1971) *Ann. Rev. Plant Physiol.* **22**, 395–430. **(2)** The topography of the thylakoid membrane of the chloroplast (1977) *Encyclopedia of Plant Physiology* (N.S.) **5**, 522–540, Springer Verlag, Berlin. **(3)** On the origin of glow peaks in *Euglena* cells, spinach chloroplasts and sub-chloroplast fragments enriched in system I or II (1977) *Photochem. Photobiol.* **26,** 33–39. **(4)** Thermoluminescence from photosynthetic membranes (1986) *Light Emission by Plants and Bacteria* Academic Press, Orlando, pp. 329–360. **(5)** Changes in the redox potential of primary and secondary electron-accepting quinones in photosystem II confer increased resistance to photoinhibition in low-temperature-acclimated *Arabidopsis* (2003) *Plant Physiol.* **132,** 2144–2151.

Memberships: Fellow: NASI 87; INSA 91; NAAS 91 • President: Indian Photobiology Soc.

Awards & Distinctions: S S Bhatnagar Prize 81 • Bharat Jyoti Best Scientist of the Year 91 • Birbal Sahni Award 94.

Sanjappa, Munivenkatappa

Elected: 1999
Position: Dir, Botanical Survey of India, Kolkata
Specialization: Plant Taxonomy and Conservation
Date and Place of Birth: 1 January 1951; Pethandlahalli, Karnataka
Parents: S Munivenkatappa and M Ramakka
Spouse and Children: Usha; two *s* (Chanakya, Shaurya)
Address: Botanical Survey of India, 3rd MSO Building, F Block, CGO Complex,
5th Floor, D F Block Salt Lake City, Kolkata 700 064, India
Tel. (033) 2334 4963 (O), (033) 2474 5953 (R)
email: m_sanjappa@yahoo.co.in, m.sanjappa@nic.in; URL: www.bsi.gov.in

Education: Bangalore Univ.: BSc(Hons) 71, MSc 73; Baroda Univ.: PhD 77.

Career: Central Sericultural Res. & Training Inst., Mysore: Sr Sci. Asst 77–79; Botanical Survey of India: Systematic Botanist/Sci. 79–93, Dy Dir 94–2000, Jt Dir 2000–01; Dir 2001–.

Scientific Work: Outstanding work on Leguminosae, particularly inventorization of Indian legumes and the taxonomic revision of the tribe Indigofereae (to which indigo plant belongs), has enriched our understanding of gene pools of this biologically, ecologically and economically important family vital for utilization and conservation. Pioneering work has formed the basis of the World Legume Database for India and South East Asia. Contribution to the compilation of the *Flora of India*, both as author and editor is a landmark in the understanding of plant diversity. As a field biologist, has explored large areas of India, especially alpine Himalayas and tropical islands, discovering several new species of potential economical value.

Important Publications: **(1)** *Legumes of India* (1992) Dehra Dun, pp. 338. **(2)** *Flora of India* (1993) **3**, Botanical Survey of India, Calcutta, pp. 639. **(3)** *Tribe Indigofereae (Leguminosae Papilionoideae) Fascicle* (1995) **21**, Botanical Survey of India, Calcutta, pp. 167. **(4)** *Legumes of South Asia, a check-list* (2003) Royal Botanic Gardens, Kew, UK, pp. 536. **(5)** *Floristic diversity of tiger reserves of India* (2008) Botanical Survey of India, Kolkata.

Memberships: Fellow: NASI 2002; Plant Committee, Asia; Convention on International Trade in Endangered Species of Flora and Fauna (CITES) Switzerland 2004–10; Steering Committee: Species Planetarium Project, World Flora.

Awards & Distinctions: E K Janaki Ammal National Award for Taxonomy, Govt of India • Indian Botanical Soc. Panchanan Maheshwari Medal • V Sivarajan Gold Medal • Indian Assn for Angiosperm Taxonomy • Panigrahi Commemoration Prize, Bengal Botanical Soc. • H Santhapau Medal, Assn For Plant Taxonomy.

Sankara Rao, Kolluri

Elected: 2002
Position: Distinguished Fellow, CES, IISc
Date and Place of Birth: 15 December 1939, Kakinada, Andhra Pradesh
Parents: Suryanarayana K and Mahalakshmi
Spouse: Malathi
Address: Centre for Ecological Sciences, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2293 2506, 2293 2786 Extn. 261 (O), (080) 2341 1148 (R), Mobile: 98453 39826
email: bharadwaj@ces.iisc.ernet.in, sankara.kolluri@gmail.com

Education: Andhra Univ.: BSc 60; Bangalore Univ.: MSc 68, PhD 80.

Career: Bangalore Univ.: Lecturer 63–80; Univ. of Waterloo, Canada: Postdoc Fellow 80–81; Univ. of Calgary, Canada: Postdoc Res. Assoc. 81–82; IISc, Bangalore: CSIR Pool Offr 83–86, Sr Sci. Offr 86–92, Principal Res. Sci. 92–2000, Assoc. Prof. 2000–02, Emeritus. Sci. CSIR 2002–05, Distinguished Fellow: Centre for Ecological Sciences.

Scientific Work: Probing into molecular basis of development in plants, presented unequivocal evidence for the involvement of Ca^{2+}-mediated signal transduction in the induction and regulation of embryogenesis and suggested a role for calcium-dependent protein kinase (CDPK) in early plant development. Further observed that CDPK isoforms show preferential accumulation and activity during seed maturation, and provided evidence for an inactive/inhibited form of a CDPK at the onset of seed dormancy that provides potential new insights into the mechanism of CDPK regulation. Demonstrated fluorescence spectral evidence for Ca^{2+} binding-induced conformational changes in a CDPK of sandalwood somatic embryos. Established evidence for CDPK- and Ca^{2+} regulation during oil body biogenesis in plants, which is a new finding. In the area of plant biotechnology, designed novel tissue culture- and genotype-independent methods of recovery of whole plant transgenics for several crops including groundnut, sunflower, safflower, pigeon pea, field bean and cotton. Generated 'Tikka' disease-resistant transgenic groundnut and '*Alternaria*' leafspot-resistant sunflower.

Important Publications: **(1)** Ca^{2+}-mediated signalling during sandalwood somatic embryogenesis: Role for exogenous Ca^{2+} as second messenger (2000) *Plant Physiol.* **123**, 1301–1311. **(2)** Spatio-temporal accumulation and activity of calcium-dependent protein kinases during embryogenesis, seed development and germination in sandalwood (*Santalum album* L.) (2000) *Plant Physiol.* **122**, 1035–1044. **(3)** Temporal association of Ca^{2+}-dependent protein kinase with oil bodies during seed development in *Santalum album* L.: Its biochemical characterization and significance (2003) *Plant Cell Physiol.* **44**, 4, 367–376. **(4)** Purification and characterization of Ca^{2+}-dependent protein kinase from sandalwood (*Santalum album* L.): Evidence for Ca^{2+}-induced conformational changes (2001) *Phytochemistry* **58**, 203–212. **(5)** *Indian Institute of Science Campus: A botanist's delight* (2008) IISc Press. **(6)** *Flowering plants of Indian Institute of Science: A field guide* (2009) IISc Press.

Memberships: The Linnean Soc. of London.

Sankaran, G*

Elected: 1940
Last Address: Nutrition and Physiological Hygiene, All India Institute of Hygiene and Public Health, 110, Chittaranjan Avenue, Calcutta, India
***Deceased**

Education: Univ. of Madras: MBBS.

Career: All India Inst. of Hygiene and Public Health, Calcutta: Prof. of Biochemistry.

Sankaran, Parameswaran

Elected: 2007
Position: Prof., IMSc, Chennai
Specialization: Topology; Algebraic Groups
Date and Place of Birth: 04 June 1959; Pudukkottai, Tamil Nadu
Parents: R Sankaranarayanan and S Varalakshmi
Spouse and Children: Revathy; one s (Anand)
Address: Institute of Mathematical Sciences, CIT Campus, Taramani, Chennai 600113, India
Tel. (044) 2254 3211 (O), (044) 2446 0909 (R)
email: sankaran@imsc.res.in; URL: http://www.imsc.res.in/~sankaran

Education: Univ. of Madras: BSc 79; IIT Madras: MSc 81; Univ. of Calgary, Canada: PhD 85.

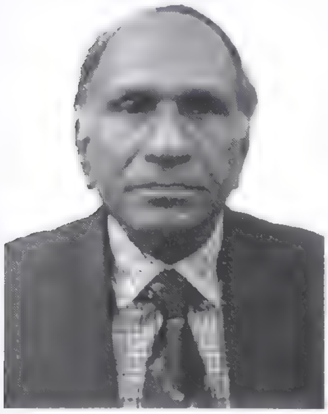
Career: Chennai Mathematical Inst.: Postdoc Fellow 87–89, Reader 94–98, Assoc. Prof. 98–2000; SPIC Sci. Foundation, Chennai: 89–94; Inst. of Math. Sc.: Reader 2000–03, Prof. 2003–.

Scientific Work: In several papers, some in collaboration with others, topology and geometry of real and complex Grassmann manifolds were studied. More specifically, classification of maps between distinct Grassmannians, *K*-theory of oriented Grassmann manifolds, the vector field problem, existence of almost complex structures, rational homotopy, cobordism, etc. were problems that were addressed. More recently, *K*-theory of smooth compact toric varieties, and related spaces were described in terms of generators and relations. Certain invariant rings for special orthogonal groups in positive characteristics were studied and application to certain moduli spaces were obtained.

Important Publications: **(1)** *K*-rings of smooth complete toric manifolds and related spaces, to appear in *Tohoku Math J.* **(2)** Cohomology of toric bundles (2003) *Comment. Math. Helv.* **78**, 3, 540–554. **(3)** Standard monomial bases, moduli spaces of vector bundles, and invariant theory (2006) *Transform. Groups* **11**, 4, 673–704. **(4)** A new approach to standard monomial theory for classical groups (1998) *Transform. Groups* **3**, 1, 57–73. **(5)** Stable parallelizability of partially oriented flag manifolds. II (1997) *Canad. J. Math.* **49**, 6, 1323–1339.

Memberships: Fellow: NASI 2006.

Santappa, Mushi



Elected: 1961
Specialization: Physical and Inorganic Chemistry; Photochemistry; Science and Technology of Leather; Polymer Chemistry and Industrial Pollution Control
Date and Place of Birth: 2 October 1923; Jonnagiri, Kurnool Dist, Andhra Pradesh
Parents: A Basappa and Sailamma
Spouse and Children: Dhanalakshmi Devi; two *s*, three *d*
Address: 8 (old 73), Third Main Road, Kasturba Nagar, Adyar, Chennai 600 020, India
Tel. (044) 2441 5163 (R), Mobile: 98409 75032
email: sunanda_cle@yahoo.co.in

Education: Univ. of Madras: BA 43; BHU: MSc 45; Univ. of London, UK: PhD 49; Victoria Univ. Manchester, UK: PhD 51.

Career: Univ. of Madras, Dept of Physical Chem.: Reader & Head 52–58, 62–65, 66–73; Madurai Extension Centre: Prof. of Chem. 58–62; CLRI, Madras: Dir 72–79, 80–81; Venkateswara Univ., Tirupati: Vice-Chancellor 79–80; Madras Univ.: Vice-Chancellor, 81–84; Tamil Nadu Pollution Control Board: Sci. Adviser 96–2005; DST Sci and Soc. Programme: Chmn 98–2002.

Scientific Work: Metal ions have been used for the first time without reference to reducing agents as in the common redox systems. Solution properties of polymers and co-polymers have been studied extensively and various parameters such as molecular weights of the polymers; RMS end-to-end distances; second virial co-efficients; polymer-solvents interaction parameters, etc. have been evaluated. Systems of binary and ternary complexes involving metal ions and two or three ligands from various types of amino-acids have been studied with a view to elucidate the structures of the complexes and also evaluate the stability constants for the first, second and third stages of coordination with ligands. The technology developed at CLRI has been a big boost to the leather industry.

Important Publications: **(1)** Chemistry & physics of polymers particularly in the development of novel thermal and photochemical initiator systems (1951) *J. Polymer* Sci. 7, 243. **(2)** Chemical dynamics involving photochemical (uranylions) and thermal (ceric and cobaltic ions) oxidations, hydrolysis and deprotonation of coordination complexes (1967) *J. Sci. Ind. Res.* **26**, 76. **(3)** Evaluation of stability constants of binary & ternary coordination complex of uranyl, nickel (1971) *J. Inorg. Nucl. Chem.* **33**, 1775. **(4)** Science & technology of leather polymeric compositions for processing & finishing of leather (1974) *Leather Sci.* 192. **(5)** *State of the art in polymer science and engineering in India* (1996) T R Publications.

Memberships: Fellow: INSA 71; NASI 83; London Royal Inst. of Chemistry; Indian Chemical Soc.

Awards & Distinctions: S S Bhatnagar Prize 67 • Andhra Univ. DSc hc 83 • FICCI Award 87 • Gulbarga Univ. DLitt h c 92 • J C Ghosh Memorial Medal • DSc hc: Andhra Univ. 83, Sri Krishna Deva Raya Univ. 94, Madras Univ. 2008, Madurai Kamaraj Univ. 2008.

Santhanam, Vaidyanathaswamy

Elected: 1974
Specialization: Plant Breeding and Genetics; Res. Management; Cotton Development
Date and Place of Birth: 31 July 1925; Tiruvarur, Tamil Nadu
Parents: T S Vaidyanathaswamy and Meenakshi Ammal
Spouse and Children: Rajammal; two *s*, two *d* (Ramachandran, Ravi, Lalitha, Usha)
Address: Shri Abhirami, 107, Venkataswamy Road West, R S Puram Post, Coimbatore 641 002, India
Tel. (0422) 254 6857 (R), Mobile: 99946 22260

Education: Univ. of Madras: BSc 46, MSc 52, PhD 57.

Career: Department of Agri., Madras: Res. Asst in Cotton 47–52; Central Tobacco Res. Inst.: Agronomical Asst 52–54; Dept of Agri., Tamil Nadu: Asst Cotton Specialist 54–58; Reader in Genetics & Plant Breeding 58–60, ICAR: Head, Regional Res. Station, Coimbatore 60–68; Project Coordinator (Cotton Res.) 68–75; FAO/UN: Cotton Specialist in Burma 75–78, Project Team Leader 78–83, Consultant (Sr Adviser) 83–87.

Scientific Work: Introduced the concept of ideal plant type for increasing productivity and early maturity in the Indian cotton breeding programme; contributed to the development of new extra-long staple fine quality cotton varieties in India suitable for replacing imported Egyptian cottons. Developed high yielding cotton varieties and improved agronomic practices suitable for adoption in Burma leading to nearly fifty percent increase in production between 1975 and 1982, under the auspices of projects funded by the UNDP.

Important Publications: **(1)** Breeding procedures for cotton (1967) *ICAR Tech. Bull.* Series, No. 10. **(2)** Cotton (1974) *Evolutionary studies in field crops*, Cambridge Univ. Press, 89–100. **(3)** *Cotton* (1976) ICAR low priced bookseries, No 1. **(4)** Agri-history of cotton in India (1997) *Asian Agri-history* **1,** 4 235–251. **(5)** Emerging trends in conventional breeding for cotton improvement (2004) *Proc. Int. Symp.* UAS Dharwad/ICAR, 1–5.

Memberships: President: Indian Soc. for Cotton Improvement 85–87 • Hon. Fellow 2002.

Awards & Distinctions: Rafi Ahmed Kidwai Memorial Prize 66–67 • Indian Merchants Chamber Award 74 • ICAR Award for team research 75 • Lifetime Achievement Award, Univ. of Agri. Sci., Dharwad 2004.

Sanyal, Milan Kumar

Elected: 2001
Position: Prof., Head, Surface Phys. Dn, SINP
Specialization: Condensed Matter Physics; Surface Physics; Nanomaterials; Synchrotron X-ray Scattering
Date and Place of Birth: 6 January 1954, Ranaghat, West Bengal
Parents: Khagendra Nath Sanyal and Smriti
Spouse and Children: Alpana; two *d* (Monamie, Madhumanti)
Address: Surface Physics Division, Saha Institute of Nuclear Physics, 1/AF, Bidhan Nagar,
Kolkata 700 064, India
Tel. (033) 2321 4763 (O), (033) 2321 5453 (R), Mobile: 98742 35010
email: milank.sanyal@saha.ac.in; URL: http://www.saha.ac.in/surf/www/members_template.php?id=12

Education: Univ. of Kalyani: BSc Hons 74; BARC Trg School: 76; Univ. of Bombay: MSc 81, PhD 87.

Career: BARC, Mumbai: Sci. Offr 77–94; Brookhaven Natl Lab.: Res. Assoc. 89–91; Saha Inst. of Nuclear Phys.: Prof. 95–.

Scientific Work: Low-dimensional magnetic ordering in nano-structures. Dramatic enhancement of capillary wave fluctuations of a decorated water surface. Reversible negative thermal expansion and glass-transition of ultra-thin polymer films. Electronic transport properties of nano-structures. Ion beam induced nano-scale ripple formation on semiconductors surfaces. Growth mechanism, structure and thermal stability of LB films. Determination of small fluctuations in density profiles of polymer films. Development of inverse scattering techniques based on Born approximation.

Memberships: Fellow: INSA 2001; NASI 2002; Asia Pacific Acad of Materials; West Bengal Acad. of Sci. & Technol.

Awards & Distinctions: N S Satyamurthy Award 87 • Young Physicist Award, Indian Physical Soc. 87 • MRSI Medal 2000.

Sanyal, Suhas Chandra

Elected: 1992
Specialization: Medical Microbiology; Pathogenicity; Nosocomial Infections; Infection Control; Antimicrobial Therapy
Date and Place of Birth: 1 January 1942; Mymensingh, now in Bangladesh
Parents: Sudhir Chandra Sanyal and Leelaboti
Spouse and Children: Kalyani; one *s*, one *d* (Rupan, Rubella)
Address: Udita, 09-0303, Nabami, 1050/1, Survey Park, Kolkata 700 075, India
Tel. (033) 2418 8005 (R), Mobile: 98302 16875
email: scsanyal@hotmail.com

Education: Calcutta Univ.: MBBS 66, PhD 69; BHU: MD 74.

Career: Indian Inst. of Experimental Medicine, Calcutta: Res. Fellow 66–69; NICED, Dept of ICMR: Res Offr 69–70; BHU, Varanasi, Dept of Microbiology: Lecturer 70–73, Reader 73–79, Prof. 79; ICDDR, Dept of

Microbiology: Sr Intl Sci. 81–83; Ministry of Health, State of Kuwait, Lab. Med. Services: Sr Consultant Microbiologist & Dir of Laboratories.

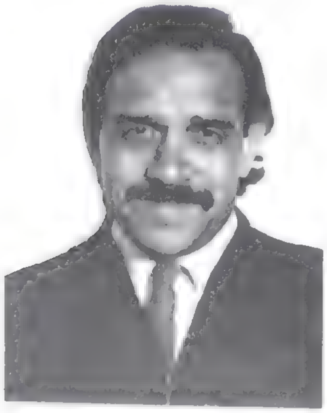
Scientific Work: Showed that local stimulation of antibacterial and antitoxic antibodies in the gut is the key for conferring protection against cholera and oral administration of live attenuated cells is the most effective way to do so. Showed the production of enterotoxin/s by a number of bacteria such as *Aeromonas*, etc. Demonstrated conclusively that only K^+ but not K strains of *V. parahaemolyticus* can cause diarrhoea. Determined the minimum infective dose of the organism through volunteer study. Demonstrated the aetiologic role of *Cryptosporidium* in diarrhoea including its zoonotic nature in the Indian subcontinent. Developed two *Campylobacter* diarrhoea models, media for better growth and preservation of *C. jejuni* and a synthetic medium for good yield of toxin, and demonstrated the molecular and immunobiologic similarities between this and cholera toxin. Discovered a new cholera toxin (NCT) produced by all *V. cholerae* O1 strains and demonstrated that the disease cholera can be caused by either CT or NCT or both. Demonstrated that all diarrhoeagenic bacteria whether clinical or environmental in origin are potentially enterotoxigenic and the toxin gene/s undergo repression-derepression phenomenon depending on the micro-environment. Developed/modified a number of diagnostic/epidemiologic tools which have simplified the identification of various aetiologic agents and tracing the sources of infection that enabled prediction of imminent cholera epidemics as it happened in early seventies in Calcutta and early eighties in Dhaka, Bangladesh.

Important Publications: **(1)** Role of household animals in maintenance of cholera infection in a community (1974) *J. Infectious Diseases* **130**, 575–579. **(2)** A new cholera-toxin (1983) *Lancet* **1**, 1337. **(3)** Live oral cholera vaccine: A new toxin produced by candidate strains in: *Natural toxins: Animal, plant and microbial* (1986) Oxford University Press, Oxford, pp. 304–320. **(4)** Cholera-toxin gene-positive vibrio-cholerae o1 Ogawa and Inaba stains produce the new cholera-toxin (1988) *FEMS Microbiol. Lett.* **50**, 113–116. **(5)** The increase in carbapenem use and emergence of *Stenotrophomonas maltophilia* as an important nosocomial pathogen (1999) *Chemotherapy* **11**, 28–33.

Memberships: Fellow: Royal Soc. of Tropical Medicine and Hygiene, London; NAMS; INSA 88; Intl Acad. of Medical Sci.; Royal College of Pathologists, London • President: Asia-Pacific Section of the International Soc. on Toxiology; Assn of Microbiologists of India.

Awards & Distinctions: Shakuntala Amirchand Award 70 • S C Agarwal Award 89 • Ranbaxy International Research Award in Medical Sciences 91.

Sarabhai, Anand



Elected: 1981
Position: Dir, Biocenter Lab, Ahmedabad
Specialization: Molecular Biology; Biotechnology; Nutrition; Ecological Strategies
Date and Place of Birth: 3 April 1938
Address: Biocenter Laboratory, The Retreat, Shahibag, Ahmedabad 380 004, India
Tel. (079) 2288 5599 (O), (079) 2286 5044 (R)
email: sarabhaianand@hotmail.com

Education: Univ. of Cambridge: BA 56, MA 59, PhD 63.

Career: TIFR, Bombay: Res. Assoc. 64–65; MRC Lab. of Molecular Biology, Cambridge Univ., England: Sci. Staff Member 65–67; Inst. of Molecular Biology, Univ. of Oregon, USA: Jane Coffin Child's Memorial Fellow, Faculty

Member 67–70; Univ. of California, USA, Dept of Chem.: Faculty Member 70–73, Vis. Faculty Member 73; Sarabhai Enterprises, Ahmedabad: Dir 73–.

Scientific Work: Important contribution to the development of molecular biology when, using an extremely elegant approach in 1964, demonstrated the co-linearity of the gene with polypeptide chain. This was the first experimental confirmation of a major tenet of the theory of genetic code. Also made valuable contributions to the study of the dynamics of protein synthesis and genetics and molecular biology of bacteriophage.

Memberships: Member: American Assn for the Advancement of Science • Fellow: Royal Soc. of Tropical Medicine and Hygiene, London; NAMS; Intl Acad. of Medical Sci.; Royal College of Pathologists, London • President: Asia-Pacific Section of the International Soc. on Toxinology; Assn of Microbiologists of India.

Sarabhai, Vikram Ambalal*

Elected: 1945
Specialization: Nuclear Physics; Cosmic Rays
Date and Place of Birth: 12 August 1919; Ahmedabad, Gujarat
Parents: Ambalal and Sarladevi
Spouse and Children: Mrinalini; one *s*, one *d* (Kartikeya, Mallika)
Last address: Department of Atomic Energy, Apollo Pier Road, Bombay 400 001, India
***Deceased:** 31 December 1971

Education: Univ. of Cambridge, UK: BA 40, MA 44, PhD 47.

Career: IISc, Bangalore: Res. Fellow 40–47; PRL, Ahmedabad: 47–71, Dir 65–71, Prof. of Cosmic Ray Phys.; ISRO: Chmn 62–71; Govt of India, Chmn AEC. 66–71; Swastik Oil Mills: Chmn; Ahmedabad Manufacturing & Calico Printing Co., Karamchand Premchand Ltd & Sarabhai Chemicals, Baroda: Dir.

Scientific Work: Was primarily concerned with the time variations of cosmic rays. Inferred that meteorological effects could not entirely account for the observed daily variations of cosmic rays and that these effects would be estimated and corrections applied to cosmic ray time variations. Was a pioneer in space research in India and was responsible for the setting up of the Space Science and Technology Centre near Thumba and an Experimental Satellite Communication Earth Station at Ahmedabad. Envisioned the tremendous scope of research in space science to address to the country's problems in communication, education, meteorology, geodesy, remote sensing and other areas.

Memberships: Fellow: INSA 63; Intl Geophysical Union • President: Phys. Sec. of Indian Sci. Congress 62.

Awards & Distinctions: S S Bhatnagar Prize 62 • Padma Bhushan 66 • Padma Vibhushan 72.

Sarin, Manmohan

Elected: 2000
Position: Sr Prof., Chmn, Planetary & Geosciences Dn, PRL, Ahmedabad
Specialization: Atmospheric and Aerosol Chemistry; Chemical Oceanography
Date and Place of Birth: 26 July 1951; Delhi
Parents: Premnath Sarin and Raj
Spouse and Children: Rajni; one s (Sumit)
Address: Physical Research laboratory, Navarangpura, Ahmedabad 380 009, India
Tel. (079) 2631 4306 (O), (079) 2685 8711 (R), Mobile: 94267 27301
email: sarin@prl.res.in

Education: Nagpur Univ.: BSc 71, MSc 73; Gujarat Univ.: PhD 84.

Career: PRL: Sci. Geocosmophys. Group 83–92, 87–92, Reader Oceanogr. & Climate Studies Group 92–97, Assoc. Prof. 98–2001, Prof. 2002–07, Sr Prof. 2008–; Univ. of Delaware, USA: PDF 84–86.

Scientific Work: The early phase of research was focussed on solute-particle interactions in the ocean and particle dynamics as a part of a major international oceanographic programme (GEOSECS). During later years, systematic study on Po^{210}/Pb^{210} and Th^{234}/U^{238} radioactive disequilibria in ocean water column and C/Th^{234} ratio in settling particles has provided quantitative estimates of settling fluxes of carbon and its relation to surface ocean primary productivity. The research articles on geochemistry of Indian rivers are considered as benchmark papers and referred in the textbooks. Current research studies related to chemical and isotopic composition of atmospheric aerosols have yielded useful information on their sources, chemical interactions with environmental chemical species, deposition fluxes and their impact on radiation budget of the atmosphere. Overall, these research studies have provided quantitative understanding of the chemical weathering processes in the river basins, scavenging of trace metals and biogeochemistry of carbon in the sea, and the impact of present-day anthropogenic sources on the chemical make up of atmospheric aerosols.

Important Publications: **(1)** Major ion chemistry of the Ganga–Brahmaputra river systems, India (1984) *Nature* **312**, 538–541. **(2)** The Indus river system: Major ion chemistry, uranium and strontium isotopes (1994) *Chem. Geol.* **116**, 245–249. **(3)** Long-term characterization of ionic species in aerosols from urban and high-altitude sites in western India: Role of mineral dust and anthropogenic sources (2005) *Atoms. Environ.* **39**, 5541–5554. **(4)** A review of present techniques and methodological advances in analysing ^{234}-Th in aquatic system (2006) *Marine Chem.* **100**, 190–212. **(5)** Carbonaceous and inorganic species in atmospheric aerosols during wintertime over urban and high-altitude sites in North India (2007) *J. Geophys. Res.* **112**, D21307.

Memberships: Fellow: Geological Soc. of India 94; INSA 2008; NASI 2008.

Awards & Distinctions: A K Ganguly Felicitation Prize 89 • Mary Sears Award 2004.

Sarin, Shiv Kumar

Elected: 2005
Position: Prof., Dept of Gastroenterology, G B Pant Hospital, New Delhi
Specialization: Gastroenterology
Date and Place of Birth: 20 August 1952; Tonk, Rajasthan
Parents: K K Sarin and Uma
Spouse and Children: Sunita; one *s*, one *d*
Address: Department of Gastroenterology, G B Pant Hospital, New Delhi 110 002, India
Tel. (011) 2323 2013 (O), (011) 2687 3563 (R)
email: sksarin@bol.net.in, sksarin@nda.vnsl.net.in

Education: Rajasthan Univ.: MBBS 74, MD 72; AIIMS: DM 81; Rajasthan Univ.: LLB 76.

Career: Sawai Man Singh Med. College, Jaipur: Resident Intern and Instructor 74–77, Registrar 76–77, Asst Clinical Pathologist 77–78, Chief Resident 78; AIIMS: Sr Fellow 78–81, Lecturer 81–83; G B Pant Hospital: Asst Prof. 83–87, Assoc. Prof. 87–91, Prof. 91–97, Prof. 97–2004, Dir, Prof. 2004–.

Scientific Work: Has focussed on the pathogenesis and management of specific liver diseases; portal hypertension, variceal bleeding and chronic hepatitis. Novel contributions include: Use of alcohol for endoscope sclerotherapy for bleeding varices, now universally used; hemodynamic technique of intravariceal pressure measurement; identifying hemodynamic gradients in NCPF; nomenclature for gastric varices, universally adopted as Sarin's classification; concept of growth retardation in portal vein thrombosis; introduction of transjugular liver biopsy and portal hemodynamic techniques in India; primary prophylaxis of variceal bleeding by band ligation, popular round the world; changing nomenclature of 'HBV carrier' to 'chronic HBV infection', endorsed by Asian Pacific Consensus; reported that gallstones could be familial, a gene has now been identified to support this; development of a rabbit model of NCPF; profile and management of HBV mutants in India; defining the profile and introducing TNF-α inhibitor, pentoxyphylline for treatment of NASH; describing recombinant HBV genotypes from India and non-YMDD mechanisms of viral breakthrough.

Important Publications: **(1)** *Hepatitis B in India, problems and prevention* (1996). **(2)** *Transfusion associated hepatitis* (1998). **(3)** *Hepatitis B: Carrier to cancer* (2001). **(4)** *Hepatitis B in India: Prevention and management* (2004).

Memberships: Fellow: NASI 97; INSA 2004; FAMS; Indian College of Physicians.

Awards & Distinctions: Amrut Mody Res. Foundation Award 87 • D V Dutta Memorial Award, ICMR 88 • S S Bhatnagar Award 96 • Ranbaxy Res. Foundation Award 96 • President: Indian Assn for the Study of Liver 2001.

Sarkar, Chitra

Elected: 1999
Position: Prof., Pathology, AIIMS, New Delhi
Specialization: Neuropathology
Date and Place of Birth: 11 September 1955, Bangalore, Karnataka
Parents: P R Chowdhury and Rekha
Spouse and Children: B K Sarkar; one *d*
Address: Department of Pathology, All India Institute of Medical Sciences, Ansari Nagar,
New Delhi 110 029, India
Tel. (011) 2659 3371 (O), (011) 2649 3250 (R), Mobile: 98101 81945
email: sarkar.chitra@gmail.com

Education: Bangalore Univ.: MBBS 78; AIIMS: MD 81; London: FRC (Path).

Career: AIIMS: Jr Res. 78–81, Tutor 81–84, Res. Assoc. 84–85, Res. Offr 85–86, Asst Prof. 86–90, Assoc. Prof. 90–94, Addl Prof. 94–98, Prof. 98–; Kuwait Univ.: Assoc. Prof. 93–95.

Scientific Work: Seminal contributions in the area of brain tumours are outstanding. Showed that pituitary adenomas are composed of cells with pluripotent potential for producing more than one hormone concomitantly. These findings nullified the then prevalent one cell-one-hormone hypothesis. Well recognised for detailed structural and histogenetic studies on intracranial tumours prevalent in India. These studies are not mere description of difficult to obtain brain tumours, but use an original multidisciplinary approach to understand histogenesis and behaviour. Thus using immune electron microscopy, *in vivo, in vitro* labelling, cell kinetics, computer aided grading and oncogene expression, added new insights to neuro-oncology. In addition, developed *in vitro* explant cultures of primary tumours which further contributed basic information on proliferation kinetics and the subsquent behaviour of individual tumours. These studies serve as a model for prognosticating the disease outcome as well as for planning therapeutic strategies.

Memberships: Member: Natl Acad. of Med. Sci. 97–98 • Fellow: NASI 2003; Royal Soc., London.

Awards & Distinctions: Neurological Soc. of India 85 & 90 • IASc Assoc. 87–90 • Herbert Krause Gold Medal.

Sarkar, Debi Prasad

Elected: 2007
Position: Prof., Univ. of Delhi South Campus
Specialization: Biochemistry; Molecular Virology; Cell Biology; Biotechnology
Date and Place of Birth: 15 January 1958; Sookjora, West Bengal
Parents: Ram Prasad Sarkar and Sandhya Rani
Spouse and Children: Neelam K; one *d* (Tanushree)
Address: Department of Biochemistry, University of Delhi South Campus, Benito Juarez Road,
New Delhi 110 021, India
Tel. (011) 2411 1967 (O), (011) 2411 3869 (R), Mobile: 98106 96767
email: dpsarkar59@rediffmail.com, dpsarkar59@gmail.com, debi.sarkar@south.du

Education: BHU: BSc Hons 78, MSc 80; Calcutta Univ.: PhD 86.

Career: Indian Inst. of Chemical Biology: JRF/SRF 81–85; Univ. of Delhi, South Campus: SRF/Res. Asst 85–86, Lecturer 88–93, Sr Lecturer 93–96, Reader 96–2002, Prof. 2002–; Natl. Cancer Inst., USA: Vis. Fellow 86–88.

Scientific Work: The group has discovered an alternate receptor for Sendai virus on hepatocyte cell surface. Subsequently, the potential of reconstitued Sendai viral envelopes containing only the fusion protein was studied for targeted cytosolic delivery of various biologically active molecules into human hepatoblastoma cells in culture and liver cells in whole animals. Using this Sendai virus-based gene delivery system, mechanism of pathogenesis of hepatitis B virus X protein has been resolved. Reported for the first time that histidine functionality of an amphiphile enhances Sendai viral F glycoprotein-induced membrane fusion and results in efficient gene delivery.

Important Publications: **(1)** TNFa-308G/A polymorphism as a risk factor for HPV associated cervical cancer in Indian population (2007) *Cellular Oncology* **29**, 249–256. **(2)** Fibrillogenesis in Adan peptides is inhibited by biphenyl ethers (2008) *Biochim. Biophys. Res. Commun.* **370**, 681–686. **(3)** Form and dimensions of aggregates dictate cytotoxicities of Danish dementia peptides (2008) *Biochim. Biophys. Res. Commun.* **372**, 62–66. **(4)** Concurrence of Danish dementia and cataract: Insights from the interactions of dementia associated peptides with eye lens a-Crystallin (2008) *PloS One* **3**, e2927. **(5)** A histidine switch in haemagglutinin-neuraminidase triggers paramyxovirus-cell membrane fusion (2008) *J. Virology.*

Memberships: Fellow: NASI 96 • Member: Guha Res. Conf. 94.

Awards & Distinctions: S S Bhatnagar Award 98.

Sarkar, Pranab Kumar

Elected: 1990
Position: INSA Sr Sci., IICB, Kolkata
Specialization: Thyroid Harmones and Brain Development; Molecular Biology and Endocrinology; Neurodegenerative Diseases
Date and Place of Birth: 5 February 1939; Midnapore, West Bengal
Parents: Phani Bhusan Sarkar and Chameli
Spouse and Children: Minati; one *s*, one *d*
Address: Neurobiology Division, Indian Institute of Chemical Biology,
4, Raja S C Mullick Road, Jadavpur, Kolkata 700 032, India
Tel. (033) 2473 3491/107 (O), (033) 2337 2927 (R), Mobile: 94330 60022
email: pk_sarkar@hotmail.com

Education: Calcutta Univ.: BSc Hons 57, MSc 59, PhD 63.

Career: Univ. of California, USA: Postdoc Res. 63, 65; Harvard Univ., USA: 64–65, Bose Inst., Calcutta: Pool Offr 66–68; Univ. of Chicago, USA: Res. Assoc. 69–74; Illinois Inst. of Technol., USA: Asst Prof. 74–78; IICB, Calcutta: Sci. 79–99, Dy Dir & Head, Neurobiology Dn 89–94, Dir Grade Sci. 99–2002, CSIR Emer. Sci. and INSA Sr Sci. 2002–.

Scientific Work: Developed methodology for identifying beta-structure of proteins. Identified tubulin and actin as the two target proteins of thyroid hormones in the developing brain. Elucidated the mechanism of action of thyroid hormone in regulating the expression of these proteins and their role in maturation of neuronal and glial cells. Developed procedures for isolation and fractionation of neuronal and glial cells from rat brain. Also developed monoclonal antibodies specific to different types of brain tumours.

Important Publications: **(1)** Role of thyroid hormone on the maturation of astrocytes in the developing brain (2005) *Molecular and Cellular Neurobiology*, Narosa Publishing House, New Delhi, India, 29–36. **(2)** Degeneration and death of neurons in adult neurodegenerative diseases (2005) *Curr. Sci.* **89**, 764–773. **(3)** Thyroid hormone stimulates γ-glutamyl transpeptidase in the developing rat cerebra and in astroglial cultures (2005) *J. NeuroSci. Res.* **82**, 851–857. **(4)** Role of thyroid hormone in glutathione homeostasis in the developing rat brain. (2006) International Symposium at the Golden Jubilee Celebration of the Dept of Biochemistry, Calcutta University. **(5)** Thyroid hormone promotes glutathione synthesis in astrocytes by upregulation of glutamine cysteine ligase through differential stimulation of its catalytic and modulator subunit mRNAs (2007) *Free Radical Biology & Medicine* **42**, 617–626.

Memberships: Member: Intl Soc. of Developmental Neurosci. • Fellow: INSA 99 • Life Member: Guha Res. Conf.; Soc. of Biological Chemistry; Soc. of Neurochemistry • President: Soc. of Neurochem., India.

Awards & Distinctions: Amulyaratan Lecture Award 2004.

Sarkar, Sabyasachi

Elected: 1997
Position: Prof., IIT Kanpur
Specialization: Inorganic Chemistry; Biogeoinorganic Chemistry; Structure-Functional Analogues of Metallo Proteins
Date and Place of Birth: 17 May 1947; Barhra, West Bengal
Parents: Sunity Coomar Sarkar and Alo
Spouse and Children: Karabi; one *d* (Shatarupa)
Address: Department of Chemistry, Indian Institute of Technology, Kanpur 208 016, India
Tel. (0512) 259 7265, (0512) 259 7386 (O), (0512) 259 8623, (R), Mobile: 98390 62156
email: abya@iitk.ac.in, protozyme@gmail.com; URL: http://home.iitk.ac.in/%7E

Education: Calcutta Univ.: BSc Hons 64, MSc 66, Gorakhpur Univ.: PhD.

Career: Science College, Calcutta: JRF 67–69; Surendranath College, Calcutta: Lecturer 69–70; T D College, Jaunpur: Lecturer 70–75; Dortmund Univ.: Res. Fellow 76–77; Bielefeld Univ., Germany: Res. Fellow 77–78; IIT Kanpur: Lecturer 78–80, Asst Prof. 81–88; Prof. 88–.

Scientific Work: Mo and W are present in almost 50 enzymes from hyperthermophilic to mesophilic in origin. This can trace the primitive form of life to human. Structural-functional modelling of the native active sites of these diverse enzymes was systematically carried out. The chemistry utilized to achieve this comprised the planned synthesis of stabilization of unusual oxidation states using an active site resembling synthesized ligands, spectroscopic, X-ray structural analysis, redox responses with enzymatic kinetics followed by DFT level of calculation. Besides, metal oxo/sulfido cluster chemistry with homo and heterometal systems was pursued in relevance to nitrogenase, cuboidal-cubane core conversion and creating sphere like keplerate molecules. In heme synthesis, the precursor porphyrinogen chemistry is pursued and the unique reaction of Cu (II) porphyrinogen in air to produce superoxide radical is linked to oxidative stress. Easy synthesis of water soluble carbon nanotube and carbon quantum dots is made for biological study.

Important Publications: **(1)** Modelling for the active site of sulfite oxidase: Synthesis, characterization and reactivity of $[Mo^{IV}O(mnt)_2]^{2-}$ (mnt^{2-} = 1,2-dicyanoethylenedithiolate) (1994) *J. Am. Chem. Soc.* **116**, 9061–9070. **(2)** Modelling the tungsten sites of inactive and active forms of hyperthermophilic *Pyrococcus furiosus* aldehyde ferredoxin oxidoreductase (1996) *J. Am. Chem. Soc.* **118**, 1387–1397. **(3)** A functional mimic of the new class of tungstoenzyme acetylene hydratase (1997) *J. Am. Chem. Soc.* **119**, 4315–4316. **(4)** Chemistry of $[Et_4N][Mo^{IV}(SPh)(PPh_3)(mnt)_2]$ as an analogue of dissimilatory nitrate reductase with its inactivation on substitution of thiolate by chloride (2006) *J. Am. Chem. Soc.* **128**, 4196–4197. **(5)** Selectivity of thiolate ligand and preference of substrate in model reactions of dissimilatory nitrate reductase (2008) *Inorg. Chem.* **47**, 3393–3401.

Memberships: Indian Chemical Soc.; American Chemical Soc.; Soc. of Biological Inorganic Chemistry.

Awards & Distinctions: Alexander von Humboldt Research Fellowship 1976–78 • INSA Research Fellowship 86–89 • Indian Chemical Soc. • R D Desai Medal 87.

Sarkar, Samarendra Nath*

Elected: 1978
Specialization: Precambrian Stratigraphy; Structural Geology; Geochronology
Date and Place of Birth: 22 April 1920; Calcutta
Parents: Priyabrata Sarkar and Amiya
Spouse and Children: Namita; two *s*
Last Address: 95A, Ballygunge Gardens, Calcutta 700 029, India
***Deceased:** 10 September 2004

Education: Univ. of Calcutta: BSc Hons 41, MSc 43; Univ. of Edinburgh: PhD 48.

Career: Hyderabad Construction Co. Ltd, Hyderabad: Prospecting Geologist 44–45; Birla Brothers Ltd, Hyderabad: Geologist 44–45; GSI: Asst Geologist 49–50, Geologist 50–52; IIT Kharagpur: Lecturer in Geology 52–56, Asst Prof. 56–61; Indian School of Mines, Dhanbad, Applied Geology Dept: Prof. 61–63, Sr Prof. and Head 63–69, Dir 69–72, 72–80; USSR Acad. of Sci. Labs in Moscow: Vis. Prof. 73; DMST Project: Principal Sci. Offr 80–86; Presidency College, Calcutta: Res. Sci. 86–90.

Scientific Work: Investigated the stratigraphy, structure, petromineralogy and geochronology of the precambrians of Bhandara Drup-Balaghat districts of over 6000 sq. km area; Singhbhum-Keonjhar, Sundergarh region; crystalline nappe zone in Garhwal and Kumaon Himalayas, Nainital, and Ranikhet–Almora–Baijnath– Lansdowne; and structural control of copper ore deposits, isotope geology, fluid inclusions, trend surface analysis, electron microprobe work, and isotope studies for genesis.

Important Publications: **(1)** A revision of the precambrian stratigraphy and tectonics of Singhbhum and adjacent regions (1962) *Q. J. Geol. Min. Met. Soc. India* **34,** 97–136. **(2)** On the occurrence of two intersecting precambrian orogenic belts in Singhbhum and adjacent areas of India (1964) *Geol. Mag.* **100,** 69–92. **(3)** Stratigraphy and structure of the Sausa series in the Mehuli-Ramtek-Junewani area of Nagpur Dist, Maharashtra (1966) *Q. Geol. Min. Met. Soc. India* **38,** 77–105. **(4)** On Precambrian stratigraphy and geochronology of peninsular India (1969) *Bull. Geochem. Soc. India* **3,** 1–22. **(5)** Tectonic analysis of a part of the folded Baijnath nappe and inner sedimentary belt in Baijnath-Kausani Someshwar area, UP (1976) *Him. Geol.* **6,** 27–74.

Memberships: Fellow: INSA 74; Geological Mining & Metallurgical Soc., Calcutta.

Awards & Distinctions: Edinburgh Univ. of Overseas Fellowship 46–48 • Nuffield Foundation Fellow 66–67 • Govt of India First National Mineral Award 69 • ISM Golden Jubilee Distinguished Service Award 76 • Holland Memorial Medal 84–85 • P N Bose Memorial Gold Medal 82.

Sarkar, Utpal

Elected: 2008
Position: Sr Prof., PRL, Ahmedabad
Specialization: Theoretical High Energy Physics; Particle Physics and Cosmology; Astroparticle Physics
Date and Place of Birth: 15 May 1956; Calcutta, West Bengal
Parents: Gopal Krishna Sarkar and Saroj Bala
Spouse and Children: Sumita; one s
Address: Theoretical Physics Division, Physical Research Laboratory, Navrangpura,
Ahmedabad 380 009, India
Tel. (079) 2631 4476 (O), (079) 2686 1223 (R), Mobile: 98981 68727
email: utpal@prl.res.in; URL: http://www.prl.res.in/~utpal/home/

Education: Calcutta Univ.: BSc Hons 77, MSc 80, PhD 84.

Career: Univ. of Texas, USA: Postdoc Fellow 84–86; Univ. of Toronto, Canada: Postdoc Fellow 86–87; Institute of Mathematical Sci., Chennai: Asst Prof. 87–88; PRL: Fellow/Sci. D 88–92, Reader 93–97, Assoc. Prof. 98–2001, Prof. 2003–08, Sr Prof. 2008–; Viswa Bharati Univ. Prof. 2001–02.

Scientific Work: Significant contributions are in neutrino physics and astroparticle physics. Pointed out that the matter-antimatter oscillation type CP violation (entering in the mass matrix) can contribute to baryogenesis. In this process, the heavy right-handed neutrinos can oscillate into antineutrinos generating a lepton asymmetry before these particles decays. This contribution could be much larger than the lepton asymmetry generated due to the CP violation entering in the decays of these particles, when the right-handed neutrinos are almost degenerate. This enhanced production mechanism of lepton asymmetry is known as the resonant leptogenesis. We also proposed the triplet Higgs mechanism of neutrino masses, which is consistent with present experiments and can explain the baryon asymmetry of the universe.

Important Publications: **(1)** *Particle and astroparticle physics* (2008). **(2)** *Phys. Lett.* (1983) **B133**, 330. **(3)** *Phys. Lett.* (1996) **B389**, 693. **(4)** *Phys. Rev. Lett.* (1998) **80**, 5716. **(5)** *Phys. Rev. Lett.* (1986) **56**, 564.

Awards & Distinctions: INSA Young Scientist Award 88 • Sr Assoc. of the ASICTP, Trieste • Clark Way Harrison Distinguished Visiting Prof., Washington Univ., St. Louis, USA.

Sarma, Dipankar Das

Elected: 1993
Position: Prof., IISc, Bangalore
Specialization: Strongly Interacting Electron Systems; Disordered Systems; Nanomaterials; Conducting Polymers
Date and Place of Birth: 15 September 1955; Calcutta
Parents: Narayan Das Sarma and Jharna
Spouse and Children: Abha; three *s* (Atish, Anish, Akash)
Address: Solid State and Structural Chemistry Unit, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2360 7576, (080) 2293 2945 (O), (080) 2360 3061 (R), Mobile: 94484 63760
email: sarma@sscu.iisc.ernet.in; URL: http://sscu.iisc.ernet.in/DDSarma/

Education: IIT Kanpur: MSc 77; IISc, Bangalore: PhD 82.

Career: IISc, Bangalore: Res. Assoc. 82–83, Lecturer 86–89, Asst Prof. 89–93, Assoc. Prof. 93–99, Prof. 99–; Kernforschungsanlage, Germany: Vis. Sci. 84–86; IACS, Kolkata: MLS Chair Prof. of Phys. 2006–08 (on lien from IISc).

Scientific Work: Worked extensively in the areas of correlated systems, metal-insulator transitions employing various high-energy spectroscopies in conjunction with various theories. Early work in this direction involved the investigation of electronic structures of uranium intermetallics including various heavy fermion compounds. Also contributed significantly to the understanding of the electronic structure of transition metal silicides. Over the last eight years, has been involved in studies of electronic structure of transition metal compounds with particular emphasis on metal-insulator transitions in transition metal oxides.

Memberships: Fellow: NASI 2000; INSA 2001; TWAS 2007; American Physical Soc. 2007; Asia-Pacific Acad. of Materials 2008.

Awards & Distinctions: IISc J C Ghosh Medal 81 • INSA Young Scientist Medal 83 • IASc Assoc. 87–90 • UNESCO biennial Javed Husain Prize 89 • MRSI Medal 90 • Homi Bhabha Fellow 91–93 • S S Bhatnagar Prize 94 • Alumni Award for Excellence in Research for Science, IISc 2005 • G D Birla Award for Scientific Research, 2005 • UGC National Hari Om Ashram Trust Award: C V Raman Award for Physical Sciences 2006 • A V Rama Rao Foundation Prize Lecture, JNCASR 2006 • INSA Jagdish Shankar Memorial Lecture 2006 • 23rd R P Mitra Memorial Lecture, Delhi Univ. 2006 • TWAS Physics Prize 2006 • FICCI Award 2006–07 • J C Bose National Fellow, 2006–11 • INSA K R Rao Memorial Lecture 2008 • Natl Res. Award 2009.

Sarma, Isukapalli Gopala*

Elected: 1974
Specialization: CAD Applications for Digital Control; Discrete Event Systems Modelling; Simulation; Control Guidance and Simulations of Flight Vehicles
Date and Place of Birth: 21 September 1936; Chandalur, Andhra Pradesh
Parents: Isukapalli Gurumurthaiah and Lakshmi Narayanamma
Spouse and Children: Suguna; three *s*
Last Address: Department of Computer Science & Automation, Indian Institute of Science, Bangalore 560 012, India
***Deceased:** 10 September 1996

Education: S V Univ., Tirupati: BE 58; IISc, Bangalore: ME 60; Univ. of Wisconsin, USA: PhD 64.

Career: Univ. of Wisconsin, USA: Res. Asst 60–64; IIT Kanpur: Lecturer in Electrical Engg 64–65, Asst Prof. 65–70; IISc, Bangalore: Prof. 70–96.

Scientific Work: Made long-range studies in the general areas of optimal control systems and multi-stage games strategy. Studied in detail a number of different formulations of multi-stage games such as differential and Markov games. Investigated combat performance studies on a piloted simulation facility and undertook the system design of a low altitude terrain following control systems.

Awards & Distinctions: Vikram Sarabhai Award 77 • ASI Award Rocket and Related Technologies 93.

Sarma, Nidumolu Venkata Gurunadha*

Elected: 1989
Specialization: Radio Astronomy; Instrumention
Date and Place of Birth: 16 September 1932; Machilipatnam, Andhra Pradesh
Parents: Nidumolu Surya Prakasa Rao and Sakuntala
Spouse and Children: Lakshmi Kameswari; two *s*, one *d*
Last Address: Raman Research Institute, C V Raman Avenue, Bangalore 560 080, India
***Deceased:** 5 December 2008

Education: Andhra Univ., Waltair: BSc Hons 53, MSc 54.

Career: Andhra Univ.: Demonstrator/Res. Fellow 54–55; NPL, New Delhi: Sci. Asst and Sci. Offr 55–64; Sterrewacht, The Netherlands: Res. Scholar 60–62; TIFR, Bombay: Fellow 64–68; TIFR Radio Astronomy Centre, Ooty: Sr Res. Sci. 68–76; RRI, Bangalore: Millimeter Wave Project Co-ordinator 76–88, Prof. 88–96, Hon. Prof. 96–2007.

Scientific Work: Contributed very significantly to the establishment of radio astronomical facilities in India. Partly responsible for the design and construction of various receiver and electronic systems to major telescopes situated in four continents – Europe, USA, Australia and India. Was in total charge of designing, building and commissioning the receiver systems for the TIFR–Ooty radio telescope, and for RRI millimeter radio telescope. Contributions to observational astronomy include – structure of galactic center at 327 MHz using lunar occulation observations, determination of D/H ratio towards galactic centre, HI absorption in the direction of galactic centre and angular size measurements of various extragalactic and galactic radio sources using lunar occultation method.

Memberships: Member: Intl Astronomical Union; Sci. Advisery Committee, IUCAA.

Sarma, Padubidri Subbaraya*

Elected: 1952
Specialization: Biochemistry; Nutrition
Date and Place of Birth: 29 October 1917; Kasargod, Kerala
Spouse and Children: Savitri; three *s*, two *d*
Last Address: Department of Biochemistry, Indian Institute of Science, Bangalore 560 012, India
***Deceased:** 8 September 1970

Education: Univ. of Madras: BSc Hons 38, MSc 41; Univ. of Wisconsin, USA: PhD 46.

Career: IISc, Bangalore: Res. Student 38–41; Nutrition Res. Lab., Coonoor: Res. Asst 42–44, Res. Fellow 48–49; Univ. of Wisconsin, USA: Res. Fellow 44–46; Harvard Univ., School of Public Health, USA: Postdoc Fellow 46–48; Univ. of Madras: Prof., Reader in Biochem. 49–59; Univ. Biochemical Laboratory, Madras: Dir 49–59; IISc, Bangalore, Dept of Biochem.: Prof. and Head 59–70.

Scientific Work: Reserch interests at Bangalore included studies on the metabolism of trace elements, particularly cobalt and iron, and the production of fatty liver in rats by orotic acid. Isolated and characterized two new amino acids from Kesari dal, *Lathyrus sativus* viz., L-homoarginine and beta-N-oxalyl-L-alphabeta-diaminopropionic and (ODAP). ODAP was identified as the principal constituent in Kesari dal responsible for the neurolathyrism endemic in Central India. This work is a valuable contribution to our understanding of the aetiology of this disease.

Memberships: Fellow: INSA 62.

Awards & Distinctions: G J Watumull Award 6.

Sarma, Vallury Visweswara Subrahmanya

Elected: 1989
Position: Hon. Prof., IISc, Bangalore
Specialization: Artificial Intelligence; Reliable Computing; Systems Engineering; Indian Logic (Nyaya Darsana)
Date and Place of Birth: 7 May 1944; Vijayawada, Andhra Pradesh
Parents: Hanumantharao and Janakammma
Spouse and Children: Subbalakshmi; three *d*
Address: Department of Computer Science and Automation, Indian Institute of Science,
Bangalore 560 012, India
Tel. (080) 2293 2238, (080) 2293 2368 (O), (080) 2332 1876 (R), Mobile: 98860 60501
email: vvs@csa.iisc.ernet.in

Education: Andhra Univ.: BSc 61; IISc, Bangalore: BE 64, ME 66, PhD 70.

Career: IISc, Bangalore: Lecturer 67–73, Asst Prof. 73–80, Assoc. Prof. 80–83, Prof. 83–2006, Hon. Prof. 2006–; Carnegie Mellon Univ., USA: Vis. Prof. 79; Duke Univ., USA: Vis. Prof. 84, Univ. of SouthWestern Louisiana, USA: Centre for Advanced Computer Studies: Vis. Prof. 84–86.

Scientific Work: Work in pattern recognition deals with design and implementation of automatic identification of identity of a person based on his speech and study of these systems for forensic applications. Contributions to the study of decision tree classifiers, fuzzy pattern recognition and AI approaches to pattern recognition system design. Work in systems engineering deals with study of maintenance policies for complex equipment and modelling of fleet acquisition and inventory policies of Indian Air Force. Work in computer architecture deals with architecture optimization of real time systems. In AI, recent contribution is development of decision support tools for management applications.

Important Publications: *Reliability of computer and control systems* (1987) North-Holland, Amsterdam.

Memberships: Fellow: INSA 90; INAE 92; IEEE.

Sasisekharan, Viswanathan

Elected: 1969
Position: Prof., MIT, USA
Specialization: Molecular Biophysics
Date and Place of Birth: 1933; Mayavaram, Tamil Nadu
Parents: A Visvanathan and Meenakshi
Spouse and Children: Radha; two children
Address: c/o Prof. Ram Sasisekharan, Department of Biological Engineering, Massachusetts Institute of Technology, Cambridge, MA 02139, USA
Tel. (+1-617) 354 3510 (R)
email: sasi@mit.edu

Education: Univ. of Madras: BSc 52, MA 54, MSc 55, PhD 59; National Inst. of Health, USA: Postdoc Res. 64.

Career: Univ. of Madras, Phys. Dept: Lecturer 59–63, Reader 64–68, Prof. and Head of Dept of Phys. 68–70, Prof. of Phys. 71–72; NIH, USA: Vis. Sci. 63–64, Postdoc Res. 64; Princeton Univ., USA, Frick Chemical Lab.: Vis.

Prof. 70–71; IISc, Bangalore, Molecular Biophys. Unit: Prof. 72–93, Hon. Prof. 93; Chmn and Dean Sci. Faculty 72–87, Chmn, Dn of Biological Sciences 87–93; NIH, USA: Fogarty Scholar in Residence 88–90.

Scientific Work: Has done significant work on the conformation of biopolymers, specially polynucleotides and polypeptides. Developed incisive methods for arriving at optimal conformation of macromolecules. On the basis of these methods has suggested a new alternative model for the Watson–Crick double helical structure of DNA.

Memberships: Fellow: INSA 80.

Awards & Distinctions: S S Bhatnagar Prize 78 • FICCI Award 81 • INSA J C Bose Medal 83 • ASTRA Chair in Biological Sci. 85 • Hari Om Ashram UGC J C Bose Award 85 • USA Watumull Honor Summus Medal 87 • Om Prakash Bhasin Foundation Award 89 •.

Sastri, B Nanjunda*

Elected: 1934
Last Address: Defence Science Laboratory, Metcalfe House, Delhi 110 006
***Deceased**

Education: MSc, AIC, AIISc.

Career: IISc, Bangalore, Dept of Biochem.; Dictionary of Economic Products and Industrial Resources of India: Chief Editor; CSIR, New Delhi: Chief Editor of Publications; Defence Sci. Lab., Delhi: Dy Chief Sci. Offr.

Sastry, Murali

Elected: 2002
Position: Chief Sci. Offr, TCIC, Pune
Specialization: Surface Physics; Hybrid Materials; Nanomaterials
Date and Place of Birth: 10 June 1959; Vellore, Tamil Nadu
Parents: M A Sundaram and Bhanumathi
Spouse and Children: Jayagowri; one *s*, one *d*
Address: Tata Chemicals Innovation Centre, Anmol Pride, Baner Road, Pune 411 045, India
Tel. (020) 6621 8486 (O), (020) 2589 3952 (R), Mobile: 92230 56210
email: msastry@tatachemicals.com

Education: Madurai Kamaraj Univ.: BSc 80; IIT Madras: MSc 82; PhD 87.

Career: Univ. of Rome, ICTP: Postdoc 88–90; Sincrotrone Trieste: ICTP Postdoc 89–91; NCL Pune: Sci. 91–96, Head, Nanoscience Group 2004–05; Tata Chemicals Innovation Centre: Chief Sci. 2005–.

Scientific Work: Has made important contributions towards development of protocols for the self-assembly of colloidal particles and biomacromolecules as well as understanding their electronic properties. These studies have resulted in better protein immobilization strategies and a better understanding of protein/DNA-lipid interactions. Currently working on biotransformations in the synthesis of nanoparticles of different chemical compositions. Has also contributed to understanding electron scattering in thin organic films.

Awards & Distinctions: CSIR Young Scientist Award in Physics 93 • Scientist of the Year Award, NCL Research Foundation 2001 • ISCA B C Deb Memorial Award 2002 • CRSI Medal 2002.

Sastry, Sosale Garalapuri*

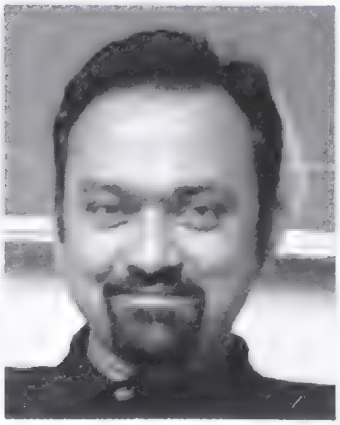
Elected: 1934
Specialization: Chemistry of oils and soaps
Date of Birth: November 1888
Parent: Kavithilaka Sosale Ayya Sastry
Spouse and Children: Venkatasubbamma; two *s*, one *d*
Last Address: Industries Department, Government of Mysore, Bangalore, India
***Deceased:** 22 September 1955

Education: Univ. of Madras: BA; Univ. of London: MSc.

Career: Inst. of Sci., Mumbai: Trainer 12–13; Nottingham, UK: Damodar Scholarship Trainee 13–18; Govt Soap Factory: Chief Chemist and Supdt 18; Lac and Paint Works: Director; ITL, Bangalore: Mg Dir; Bhadravathi Iron & Steel: Board of Managers; Sandal Oil Factory, Mysore: Tech. Dir; Govt of Mysore, Bangalore: Dir of Industries and Commerce 40.

Scientific Work: Did work on saving erosions of stone monuments of Belur, Halebeedu and Sravanabelagola. Was an expert in essential oils and perfumes.

Sastry, Srikanth



Elected: 2009
Position: Prof., JNCASR, Bangalore
Specialization: Statistical Mechanics; liquids; glass transition
Date and Place of Birth: 1 May 1964; Tumkur, Karnataka
Parents: H L Visveswara Sastry and S Kamala
Address: Theoretical Sciences Unit, Jawaharlal Nehru Centre for Advanced Scientific Research,
Jakkur Campus, Bangalore 560 064, India
Tel. (080) 2208 2838/2750 (O), Mobile: 94483 86838
email: sastry@jncasr.ac.in; URL: http://www.jncasr.ac.in/sastry

Education: Bangalore Univ.: BSc 84; IIT Bombay: MSc 86, Boston Univ.: MA 89, PhD 93.

Career: Boston Univ., USA: Res. Asst 86–93; NIH, DCRT Phys. Sci. Lab.: Vis. Fellow 93–96; Princeton Univ., USA: Res. Assoc. 96–97; Arizona State Univ., USA, Natl Inst. of Standards & Technol.: Vis. Sci. 98; JNCASR, Bangalore: Faculty Fellow 98–2003, Assoc. Prof. 2003–.

Scientific Work: Theoretical and computational study of relaxation in glass forming liquids, anomalous properties and liquid-liquid phase transition in water, silicon and related liquids, glass forming ability.

Important Publications: **(1)** Liquid-liquid phase transition in supercooled silicon (2003) *Nature Materials* **2**, 739. **(2)** The relationship between fragility, configurational entropy and the potential energy landscape of glass forming liquids (2001) *Nature* **409**, 164. **(3)** Liquid limits: The glass transition and liquid-gas spinodal boundaries of metastable liquids (2000) *Phys. Rev. Lett.* **85**, 590. **(4)** Signatures of distinct dynamical regimes in the energy landscape of a glass-forming liquid (1998) *Nature* **393**, 554–557. **(5)** Singularity-free interpretation of the thermodynamics of supercooled water (1996) *Phys. Rev.* **E53**, 6144.

Memberships: Fellow: NASI 2008.

Awards & Distinctions: B M Birla Science Prize 2001 • C N R Rao Oration Award 2001 • Swarnajayanthi Fellowship 2003 • C V Raman Young Scientist Award 2006 • S S Bhatnagar Award 2008.

Sastry, Therizhandur Panchapagesa Bhaskara*

Elected: 1934
Specialization: Astronomy
Date and Place of Birth: 12 April 1889; Therizhandur, Tamil Nadu
Parents: Panchapagesa Sastry and Bhavani Ammal
Spouse and Children: Meenakshi Ammal; three *s*, three *d*
Last Address: Manoram, Post Begumpet, Hyderabad Deccan, India
***Deceased:** 26 June 1950

Education: Univ. of Madras: BA 1908, MA 17.

Career: Nizamiah Observatory, Hyderabad: Asst 12–22, Dir 22–44; Osmania Univ., Hyderabad: Hon. Prof. 46–49.

Scientific Work: Main contribution was in the field of observational astronomy. Several volumes of *the Hyderabad Astrographic Catalogue* compiled contain very precise measurements of positions and proper motions of thousands of faint stars in selected areas of the sky in the international observational programme of Carte du Ciel. Personally supervised the setting up of the 15-inch Grubb refractor, the largest of its kind in the country. Using this refractor, new programmes of observation of variable stars and of lunar occultations were started. Besides astronomy, interests covered other branches of sciences. At Begumpet, set up meteorological and seismological stations; the records obtained here were of the highest quality.

Memberships: Fellow: Royal Astronomical Soc., London; INSA.

Awards & Distinctions: Awarded title of Rao Sahib 40.

Sathyamurthy, Narayanasami

Elected: 1990

Position: Dir, IISER, Mohali

Specialization: Molecular Reaction Dynamics and Theoretical Chemistry; Atomic and Molecular Clusters; Atoms and Molecules in a Confined Environment

Date and Place of Birth: 10 July 1951; Agarasethur, Pondicherry

Parents: G Narayanasami and N Nagalatchoumi

Spouse and Children: Suguna; two *d* (Aruna, Anjana)

Address: Indian Institute of Science Education & Research, Mohali,
MGSIPAP Complex, Sector 26, Chandigarh 160 019, India
Tel. (0172) 279 0188 (O), (0172) 221 7708 (R), Mobile: 97791 44905
email: nsath@iitk.ac.in; nsath@iisermohali.ac.in; URL: http://www.iitk.ac.in/chm/nsath.html

Education: Annamalai Univ.: BSc 70, MSc 72; Oklahoma State Univ., USA: PhD 75.

Career: Univ. of Toronto, Canada: Asst Prof. 77–78; IIT, Kanpur: Lecturer 78–80, Asst Prof. 80–85, Prof. 85, Institute Chair Prof. 2007–; IISER, Mohali: Dir 2007–; J C Bose Fellow 2006–. S N Bose National Centre for Basic Sciences, Calcutta: Hon. Prof. 95–98.

Scientific Work: Studied the effect of reagent rotation on the rate of bimolecular exchange reactions. Worked on time-dependent quantum mechanical approach to a study of reactive scattering, photodissociation and photo-induced desorption. Also investigated chaos and fractals in atomic and molecular collisions. In recent years, examined the structure and stability of molecular clusters and the behaviour of atoms and molecules in a confined environment.

Important Publications: *Reaction dynamics: Recent advance* (1991) Springer.

Memberships: Fellow: INSA 93; TWAS 2005 • Member: American Physical Soc.

Awards & Distinctions: INSA Young Scientist Medal 80 • IASc Assoc. 83–86 • Alexander von Humboldt Fellow 86 • Rev. Yeddanapalli Memorial Award 89 • S S Bhatnagar Prize in Chemical Sciences 90 • C V Raman Award 97 • FICCI Award 2001 • Silver Medal, Chemical Res. Soc. of India 2001 • Navneetha Rao Best Teacher Award, Andhra Pradesh Acad. of Sci. 2003 • JNCASR A V Rama Rao Research Foundation Lecture 2008.

Satya Murthy, Nivarthi Suryanarayana*

Elected: 1975
Specialization: Solid State Physics; Neutron Diffraction; Magnetism
Date and Place of Birth: 5 February 1936; Bangalore
Parents: Suryanarayana Sastry and Sharada
Spouse and Children: Padma; two s
Last Address: Physics Group, Bhabha Atomic Research Centre, Bombay 400 085, India
***Deceased:** 8 October 1984

Education: Univ. of Mysore: BSc 54, BSc Hons 56, MSc 57; Univ. of Bombay: PhD 67.

Career: Atomic Energy Training School: Trainee 57–58; BARC, Bombay: Sci. Offr 58–84, Assoc. Dir and Head Phys. Group; Argonne Natl Lab.: Res. Affiliate 60–62; Philippines Atomic Energy Commission, Manila: IAEA Expert and Adviser 65–66; Atomic Energy Res. Establishment, UK and Inst. Laue–Langevin, France: Guest Sci. 70–71, 76.

Scientific Work: Made outstanding contributions in the elucidation of the structure and dynamics of ferromagnetic, antiferromagnetic and ferrimagnetic materials. A new type of non-collinear arrangement of spins in ferrites, called the Yafet–Kittel type of ferrimagnetism was discovered. Also developed the polarized neutron technique to measure the distribution of magnetism in crystals. Work on magnetite, the forerunner of all modern ferrites, has brought out the nature of spin transfer occurring between iron and oxygen in such systems. Using diffuse neutron scattering methods measured magnon spectra and the strength of Heisenberg exchange interactions in a large number of ferrites and other transition metal compounds. Designed and built highly sophisticated polarized neutron spectrometers which are being used today at reactors in Thailand and South Korea also. Modern instrumentation designed include liquid helium cryostats and superconducting magnets. Also led the programme for utilizing neutron beams from a new, more powerful reactor Dhruva built in BARC and for developing new techniques not only in neutron research but in allied areas like light scattering, Mossbauer spectroscopy and electron and photon techniques.

Memberships: Fellow: INSA 81 • President: Phys. Sec. of Indian Sci. Congress 84–85.

Awards & Distinctions: S S Bhatnagar Award 80.

Satyanand, Dev*

Elected: 1964
Specialization: Psychiatry and Psychoanalysis
Date of Birth: 1 November 1906
Last Address: J39, New Delhi South Extension, Part I, New Delhi 110 049, India
***Deceased:** 28 January 1978

Education: Punjab Univ.: MBBS 30; Univ. of Edinburgh: Diploma in Psychology 52, MRCP 52; Royal College of Physicians, London: DCH 53.

Career: Indian Infectious Diseases Hospital: Resident Physician 30–34; Family Wards, Mayo Hospital, Lahore and Punjab Mental Hospital: House Physician, Asst Superintendent and Dy Superintendent 34–41; Lawrence College, Murree: Resident Physician 41–42; K E Med. College, Lahore: Demonstrator in Physiology 42–43; Indian Med. Service 43–46, Major, Asst to Consultant and Psychiatrist, Army Selection Board; Asst Prof. in Physiology & Pharmacology 46–48; Civil Surgeon, Amritsar 48–61; AIIMS, New Delhi: Prof. of Psychiatry.

Scientific Work: First psychiatrist in India to use cardiazol and insulin therapy in India. Did research in psychological medicine and allied subjects from biochemistry on one hand to comparative philosophy and culturology on the other with a view to understanding and demonstrating the specificities of the Indian mind, both in health and diseases. Studied and solutions worked out for dream mechanisms, day-dream mechanisms and speculation mechanisms. Carried out psychoanalytic and psychodynamic studies in religious personalities. A project to formulate common language to express the phenomenon studied in psychiatry.

Important Publications: (1) *Physico-chemical theory of immunity* (1932) FRBS, Lahore. (2) *Objective method of dream interpretation* (1947) Rama Krishna Books. (3) *Method of total psychoanalysis* (1951) Rama Krishna Books. (4) *Findings of total psychoanalysis* (1951) Rama Krishna Books.

Satya Prakash*

Elected: 1939
Specialization: Physical and General Chemistry; Archaeological Chemistry
Date of Birth: 24 August 1905; Bijinour, Uttar
Parents: Ganga Prasad Upadhyaya and Kala Devi
Spouse and Children: Ratna Kumari; one *s*, two *d*
Last Address: Vijnana Parishad, Maharshi Dayanand Marg, Allahabad 211 002
***Deceased:** 18 January 1995

Education: Punjab Univ. of Allahabad: MSc 27, DSc; Gurukul Univ.: Hon. Degree of Vidya Martanda 84.

Career: Empress Victoria Res. Scholar 27–30; Univ. of Allahabad: Teaching Staff 30; Prof. 62–67, Emeritus Prof. 67–72.

Scientific Work: Responsible for the foundation and advancemet of the State Council of Scientific and Industrial Research in UP. Worked on coagulation of goat's blood and other bio-colloids frequently. Attempted all along life time to render scientific knowledge available to countrymen through the Hindi medium.

Important Publications: **(1)** *Advanced chemistry of rare elements* (1956) S Chand & Company. **(2)** *Founders of science in ancient India* (1965) The Research Institute of Ancient Scientific Study. (3) *A critical study of Brahmagupta and his works* (1968) The Indian Institute of Astronomical and Sanskrit Research, New Delhi. (4) *Physico-chemical aspects of high polymers* (1977) S Chand & Company Ltd, New Delhi. (5) *Coinage in ancient India*, Govindram Hasanand, New Delhi.

Memberships: Adviser: Hindi Sansthan; Hindi Granth Acad.; National Book Trust.

Satya Prakash

Elected: 1974
Specialization: Planetary; Atmospheric; Space Plasmas
Date and Place of Birth: 1 July 1929; Najibabad, Uttar Pradesh
Parents: Gauri Lal and Bindya Devi
Spouse and Children: Sushila; one *s*, two *d* (Divya Prakash, Meena, Veena)
Last Address: 395, Saraswati Nagar, near Azad Society, Ahmedabad 380 015, India
Tel. 2674 1823 (R)
email: sprakash_prl@yahoo.com

Education: Univ. of Allahabad: BSc 48, MSc 51; Gujarat Univ., Ahmedabad: PhD 58.

Career: PRL, Ahmedabad, Dept of Cosmic Ray Phys: Res. Scholar, Res. Asst 51–58, Dept of Aeronomy: Fellow 62–67, Assoc. Prof. 67–70, Prof. 70–81, Sr Prof. 81–89, Emeritus Sci. 89–90, Emeritus Sci. CSIR 90–94; Natl Res. Council, Canada, Dept of Phys.: Postdoc Fellow 58–60; California Inst. of Technol., Cosmic Ray, USA, Dept of Phys.: Postdoc Fellow 60–62.

Scientific Work: Has made the following contributions: An all copper metal system for purification of gases; boron triflouride neutron counters and associated techniques; established neutron piles at Kodaikanal and Gulmarg; role of solar winds in the modulation of cosmic ray particles during IGY; space-borne Langmuir probes, resonance probes and electric field probes with new concepts; retarding potential analyser on Aryabhatta, the first Indian satellite; VHF radar at Thumba; UV detectors; Seya–Namioka UV monochromator; UV light sources and associated UV techniques; first time *in situ* measurements of electron density irregularities and the associated electric field in *D* and *E* region, their scale sizes and power spectrum, their classification into those due to cross-field instability; two-stream instability and neutral turbulence; molecular oxygen in mesophere; generation of electric field in the thermosphere by gravity wave winds and their transmission via the field lines; mechanism for the evening pre-reversal enhancement of the zonal electric field in the thermosphere.

Important Publications: (**1**) Electrostatic plasma instabilities in the equatorial electrojet (1971) *Nature Physical Sci.* **233**, 38, 56–58. (**2**) Cross-field instability and ionization irregularities in the equatorial *E*-region (1971) *Nature Physical Sci.* **230**, 16, 170–171. (**3**) Electric field and electron density irregularities in the equatorial electrojet (1985) *J. Atmos. Terrs. Phys.* **47**, 853–866. (**4**) Production of electric field perturbations by gravity wave winds in the *E* region suitable for initiating equatorial spread *F* (1999) *J. Geophys. Res.* **104**, A5, 10051–10069. (**5**) Role of the equatorial ionization anomaly in the development of the evening pre-reversal enchancement of the equatorial zonal electric field (2009) *J. Geophys. Res.* **114**.

Memberships: Fellow: INSA 83; NASI 90.

Awards & Distinctions: Vikram Sarabhai Award for Space Sciences 74 • Padma Shri 82.

Savithri, Handanahal Subbarao

Elected: 1993
Position: Prof., IISc, Bangalore
Specialization: Plant Molecular Virology; Protein Chemistry; Enzymology
Date of Birth: 18 March 1951
Parents: H C Subba Rao and H S Lalitha
Spouse and Children: M R N Murthy; one *s*, one *d*
Address: Department of Biochemistry, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2360 1561, (080) 2293 2310 (O), (080) 2337 2981 (R)
email: bchss@biochem.iisc.ernet.in

Education: Bangalore Univ.: BSc Hons 70, MSc 72; IISc, Bangalore: PhD 77.

Career: IISc, Bangalore: CSIR Pool Offr 81–84, UGC Res. Sci. 84–88, Asst Prof. 88–93, Assoc. Prof. 93–99, Prof. 99–.

Scientific Work: Established a laboratory for studies on architecture genome organization and expression of plant viruses. Structure-based mutational analysis of viral coat proteins established the pathway of assembly of PhMV, SeMV and PVBV. Polyprotein processing is a common strategy used by many viruses to generate different functional products from a single protein. PVBV NIa protease was shown to possess novel DNAase activity. The poly-protein processing by SeMV protease was shown to be modulated by the natively unfolded VPg. Protein-engineering methods have been used to unravel the mechanism of catalysis of several important pyridoxal phosphate (PLP) dependent enzymes. The residues responsible for catalytic function, reaction specificity and oligomeric structure have been identified.

Important Publications: **(1)** Primary structure of Belladona mottle virus (1989) *J. Biol. Chem.* **264**, 6273–6279. **(2)** Assembly of Physalis mottle virus capsid protein in *E. coli* and the role of amino and carboxy termini in the formation of the icosahedral particles (1997) *J. Mol. Biol.* **272**, 541–552. **(3)** Mutation of interfacial residues disrupts subunit folding and particle assembly of Physalis mottle tymovirus (2003) *J. Biol. Chem.* **278**, 6145–6152. **(4)** Natively unfolded VPg is essential for Sesbania mosaic virus serine protease activity (2005) *J. Biol. Chem.* **280**, 34, 30291–30300. **(5)** Importance of tyrosine residues of *Bacillus stearothermophilus* serine hydroxymethyltransferase in cofactor binding and L-allo-Thr cleavage: Crystal structure and biochemical studies (2008) *FEBS J.* **275**, 4606–4619.

Memberships: INSA; NASI.

Awards & Distinctions: P S Sarma Memorial Award 91.

Savoor, Sadashiva Rao*

Elected: 1954
Specialization: Rickettsial Diseases
Date and Place of Birth: 8 May 1901; Mangalore, Karnataka
Last Address: 20 Langford Gardens, Bangalore 560 025, India
***Deceased:** 1981

Education: Univ. of Madras: MBBS 26.

Career: Madras Med. College: Demonstrator of Bacteriology 26–27; Inst. for Med. Res., Malaysia: Asst Pathologist 27, Sr Pathologist 46, Offr-in-Charge 52; Harvard Univ., USA: Res. Fellow in Bacteriology 34; Haffkine Inst., Bombay, Dept of Virus Diseases: Rockefeller Fellow 33–34, Offg. Asst Dir 42–46.

Savur, Srinivasa Rao*

Elected: 1934
Specialization: Mathematics; Statistics; Geophysics
Date of Birth: 26 March 1894
Last Address: Meteorological Office, St. Thomas Mount P O, Madras, India
***Deceased:** 4 May 1974

Education: Univ. of London: PhD.

Career: India Meteorological Service, Pune: Meteorologist, Regional Dir 38–45; Andhra Univ.: Prof. of Meteorology and Geophys., Head of Geophys. Dept; Alibag Observatory: Dir 71.

Scientific Work: Did much valuable work in statistics. Work on stress optical coefficients and stress-optical effect found mention in textbooks. Also did work on methods of determining simple correlation coefficients and periodicities, and theoretical development of a very general test, (the performance test) as well as a general test of significance applicable to all frequency distributions, which had important applications in meteorology. Specialized in the applications of statistics to meteorology in regard to long range or seasonal forecasting.

Memberships: Fellow: Physical Soc., London; Royal Meteorological Soc.; INSA 41.

Sawhney, Kalidas*

Elected: 1935
Specialization: Cotton Research
Date and Place of Birth: 4 June 1896; Rawalpindi, Pakistan
Last Address: Shanti Nivas, Lalaguda, Secunderabad 17, India
***Deceased:** 1958

Education: Punjab Univ.: BSc 16, MSc.

Career: Islamia College, Peshawar: Prof. of Biology 18–20; Hindu College, Delhi: Prof. of Biology 20–21; Dept of Agri., Iraq: Asst Botanist and Cotton Breeder 21–29; The Nizam's Govt, Hyderabad: Cotton Res. Botanist 29–41, Dir of Agri. 41–48; Indian Central Cotton Committee, Bombay: Secretary 48–50; Regional Agri. Production Commissioner, Govt of India, Ministry of Agri.: 50.

Scientific Work: Published original papers on the vascular connections of tendrils in Cucurbitaceae, varietal test with cotton, cultivation experiment with irrigated cotton, relative utility of various methods of comparing cotton fields from experimental plots and method of propagating varieties of cotton with small amounts of seed.

Saxena, Rajiv Krishna

Elected: 1993
Position: Prof. & OSD (Academics & Planning), South Asian Univ., New Delhi
Specialization: Immunology; Nanosciences; Biotechnology
Date and Place of Birth: 24 January 1951; Delhi
Parents: Shatendra Kumar and Veerbala
Spouse and Children: Queen Baba; one *s*, one *d* (Gaurav, Garina)
Address: South Asian University, CRS Language Laboratory (JNU Old Campus), New Delhi 110 067, India
Tel. (011) 2674 1737, 2670 4505 (O), (011) 2680 8025 (R), Mobile: 99100 48241
email: rajivksaxena@hotmail.com; URL: www.rajivsaxena.info

Education: Delhi Univ.: BSc Hons 70; AIIMS, New Delhi: MSc 73, PhD 77.

Career: AIIMS, New Delhi: Tutor of Biochem. 76–78; NIA, NIH, USA: Vis. Fellow 78–81, Vis. Res. Assoc. 81–84; NII, New Delhi: Sr Res. Offr 84–85; JNU, New Delhi, School of Life Sci.: Assoc. Prof. 85–91, Prof. 92–2008, Rector 2004–05; Univ Pittsburgh School of Med., USA: Vis. Prof. 90–92; Natl Inst. Occupational Safety & Health, CDC, USA: Vis. Prof. 99–2002; US Environmental Protection Agency, RTP, North Carolina, USA, Vis. Prof. 2005–07; South Asian Univ./SAARC Univ.: Offr on Special Duty (Academics & Planning) on deputation from JNU 2008–.

Scientific Work: Described the phenomenon of reverse-ADCC reaction, in which antibodies bound to effector cytotoxic lymphocytes could facilitate the killing of tumour target cells expressing receptors for Fc portion of bound Ig. Contributed to the understanding of mechanism by which target cell MHC class I antigen levels regulate their susceptibility to NK and LAK cells. Purified and characterized a novel cytokine which augments the expression of class I MHC antigens on tumour cells and renders them resistant to lysis by natural killer lymphocytes. Described the nature of adaptive immune response in mouse lungs to mycobacterial infection and its modulation by air borne pollutants like diesel exhaust particles. Described a new technique to track age related changes in circulating blood erythrocytes. Demonstrated the toxicity of polydispersed carbon nanotubes on lung epithelial cells. Devised a new method for quantitative estimation of diesel exhaust particles deposited in lung cells and tissues.

Important Publications: **(1)** An anterior pituitary factor which stimulates thymidine incorporation in isolated thymocytes (1977) *Nature* (London) **268**, 57–58. **(2)** Modulation of natural cytotoxicity by alloantibodies. I. Alloantiserum enhancement of cytotoxicity of mouse spleen cells towards a human myeloid cell line (1979) *J. Immunol.* **123**, 846–851. **(3)** Defective T-cell response in beige mutant mice (1982) *Nature* (London) **295**, 24–25. **(4)** Effect of diesel exhaust particulate (DEP) on *Bacillus calmette-guerin* (BCG) lung infection in mice and the attendant changes in lung interstitial lymphoid subpopulations and IFN gamma response (2003) *Toxicological Sciences* **73**, 66–71. **(5)** Assessment of survival of ageing erythrocyte in circulation and attendant changes in size and CD147 expression by a novel two step biotinylation method (2006) *Experimental Gerontology* **41**, 855–61.

Memberships: Fellow: NASI 97; INSA 2003 • Member: American Assn of Immunology; Indian Soc. of Immunology.

Awards & Distinctions: NII Sr Sci. Oration Award and Gold Medal by Indian Immunology Soc. 95.

Sebastian, Kizhakeyil Lukose

Elected: 1994
Position: Prof., Amrut Mody Chair, IISc, Bangalore
Specialization: Theoretical Chemistry; Chemistry of Interfaces
Date and Place of Birth: 18 November 1950; Palai, Kerala
Parents: K C Lukose and Mary
Spouse and Children: Ansamol; one *d*, two *s*
Address: Department of Inorganic and Physical Chemistry, Indian Institute of Science,
Bangalore 560 012, India
Tel. (080) 2293 2385 (O), (080) 2360 1166 (R)
email: kls@ipc.iisc.ernet.in; URL: ipc.iisc.ernet.in/~kls

Education: Kerala Univ.: BSc 70; Calicut Univ.: MSc 72; IISc, Bangalore: PhD 76.

Career: Calicut Univ., Dept of Applied Chem.: Lecturer 76–84, Reader 84; Univ. of Liverpool, Donnan Labs, UK: Sr Res. Asst 79–81; Alexander von Humboldt Fellow 83; Cochin Univ.: Prof. 84–96, Head 90; IISc, Bangalore, IPC Dept: Prof. 96–.

Scientific Work: Made significant contribution to dynamical processes occurring at interfaces. Investigated theoretically the inelastic scattering of electrons by vibrations of adsorbates on metal surfaces. Derived an important selection rule for inelastic scattering, namely that vibrations parallel to the surface cannot be excited by electons scattered in specular directions. Developed a time-dependent version of coupled cluster theory to account for electron correlation in the scattering of Li^+ ion from the surface of Ni. Also derived a selection rule for the vibrational excitation of molecules scattered from the surface. Another problem studied is electrochemical charge transfer. Has shown that the continuum may be taken into account by treating the excitations as a collection of bosons. In addition, had worked on chemisorption theory, diffusion of atoms on surfaces, barrierless reactions, path integrals and fractional Brownian motion making interesting contributions in each.

Memberships: Fellow: INSA.

Awards & Distinctions: S S Bhatnagar Prize.

Sen, Abhijit

Elected: 1995
Position: Dean, Raman Prof., IPR, Gandhinagar
Specialization: Plasma Physics; Nonlinear Dynamics; Free Electron Lasers
Date and Place of Birth: 4 January 1946; Ahmedabad, Gujarat
Parents: Amulya Ratan Sen and Nibha Rani
Spouse and Children: Minal; one *s*, one *d*
Address: Institute for Plasma Research, Near Indira Bridge, Bhat, Gandhinagar 382 428, India
Tel. (079) 2396 9023, (079) 2396 2048 (O), (079) 2692 6444 (R), Mobile: 98250 51578
email: abhijit@ipr.res.in, senabhijit@gmail.com

Education: Gujarat Univ.: BSc 66; Univ. of Tenn., USA: MS 67, PhD 70.

Career: Oak Ridge Natl Lab., USA: Postdoc Fellow 70–71; PRL, Ahmedabad: Fellow 71–77, Assoc. Prof. 77–82, Prof. 82–86; MIT, USA: Vis. Sci. 76–78; Inst. for Plasma Res.: Prof. 86–88, Sr Prof. 88–2004, Raman Prof. 2004–.

Scientific Work: Research interests and contributions are in the areas of basic plasma physics and nonlinear dynamical systems with applications to thermonuclear fusion, space plasmas and complex systems. In magnetic fusion, major research findings include a novel method for stabilization of ballooning instabilities in tokamaks using radio frequency waves, control of trapped particle instabilities with the help of modulated neutral beams and the critical effects of sheared flows in the mitigation of neoclassical tearing modes. In nonlinear laser plasma interactions, research involving coupled solitonic solutions of light waves trapped in plasma waves have significant applications in plasma based particle acceleration schemes and in fast ignition schemes for laser fusion. In basic plasma studies, predicted and later helped in the experimental identification of a new transverse shear mode in strongly coupled dusty plasmas. In complex systems, discovered a novel phenomenon of time delay induced amplitude death in coupled oscillator systems both theoretically and experimentally. This work has opened up a whole new area of research and stimulated a great deal of subsequent work internationally.

Important Publications: **(1)** Nonlinear 1D laser pulse solitons in a plasma (1992) *Phys. Rev. Lett.* **68**, 3172. **(2)** Time delay induced death in coupled limit cycle oscillators (1998) *Phys. Rev. Lett.* **80**, 5109. **(3)** Low frequency modes in strongly coupled dusty plasmas (1998) *Phys. Plasmas* **5**, 3552. **(4)** Experimental evidence of time delay induced death in coupled limit cycle oscillators (2000) *Phys. Rev. Lett.* **85**, 3381. **(5)** Experimental observation of transverse shear waves in strongly coupled dusty plasmas (2002) *Phys. Rev. Lett.* **88**, 175001.

Memberships: Fellow: Gujarat Science Acad. 90; NASI 95; INSA 2006; American Physical Soc. 2001 • Member: Sigma Pi Sigma Physics Honor Soc.; American Physical Soc. • Assn Member: Sigma Xi • Life Member: Indian Physics Assn; Plasma Science Soc. of India • Chmn: IUPAP Commission on Plasma Physics 2002–05; ITPA MHD Stability Tropical Group • Vice-President: IUPAP, Governing Council 2002–05.

Awards & Distinctions: INSA Young Scientist Award 76 • Regular Assoc. at ICTP, Trieste 87–93 • Senior Assoc. ICTP, Trieste 94–2000, 2004–10.

Sen, Ashoke

Elected: 1991
Position: Prof., Harish-Chandra Res. Inst., Allahabad
Specialization: Superstring Theory
Date and Place of Birth: 15 July 1956; Calcutta
Parents: Anil Kumar Sen and Gouri
Spouse: Sumathi Rao
Address: Harish-Chandra Research Institute, Chhatnag Road, Jhusi, Allahabad 211 019, India
Tel. (0532) 227 4302 (O), (0532) 227 4002 (R)
email: sen@mri.res.in

Education: Univ. of Calcutta: BSc 75; IIT Kanpur: MSc 78; State Univ. of New York, USA: PhD 82.

Career: Fermilab, USA: Postdoc Fellow 82–85; Stanford Linear Accelerator Centre, USA: Postdoc Fellow 85–88; TIFR, Bombay: Reader, Assoc. Prof 88–95; Harish-Chandra Res. Inst., Allahabad: Prof. 95–.

Scientific Work: Finding a natural solution to the fine tuning problem in string theory; establishing the relationship between conformal invariance of 2-D nonlinear sigma-models and classical equations of motion in string theory; proving the conformal invariance of supersymmetric sigma-models on calabi-Yau manifolds to all orders in the perturbation theory; showing the relationship between (2, 0) superconformal symmetry on the world-sheet and $N = 1$ supersymmetry in space-time; analysis of ambiguities in loop amplitudes in fermionic string theories and showing the vanishing of the cosmological constant in heterotic string theory in flat space-time; developing a general method for classifying rational conformal field theories and computing correlation functions in arbitrary rational conformal field theories in 2D; proving background independence of string field theory for string theories formulated around nearby conformal field theories related by marginal deformations; developing general method for finding new classical solutions in string theory starting from known solutions with isometries; and finding evidence for strong-weak coupling duality symmetry in string theory and $N = 4$ supersymmetric gauge theories in four dimensions.

Memberships: Fellow: INSA 96; NASI 97; Royal Soc. London 98; TWAS 2004.

Awards & Distinctions: IASc Assoc. 88–91 • ICTP Yukawa Prize 89 • S S Bhatnagar Award 94 • B M Birla Award 95 • G D Birla Award 96 • TWAS Prize 97 • R D Birla Award 98 • Padma Shri 2001 • S N Bose Medal 2004 • H K Firodia Award 2005.

Sen, Diptiman

Elected: 2001
Position: Prof., IISc, Bangalore
Specialization: Theoretical Condensed Matter and Statistical Physics; Quantum Field Theory
Date and Place of Birth: 17 January 1959; Calcutta, West Bengal
Parents: Amiya Kumar Sen and Geeti
Spouse and Children: Piyali; one *d* (Ananya)
Address: Centre for High Energy Physics, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2293 2974 (O), (080) 2360 7073 (R)
email: diptiman@cts.iisc.ernet.in; URL: http://cts.iisc.ernet.in/Personnel/diptiman.html

Education: Delhi Univ.: BSc, 78; Princeton Univ., USA: MS 81, PhD 84.

Career: Carnegie-Mellon Univ., USA: Postdoc Assoc. 84–86; Edinburgh Univ., UK: Postdoc Assoc. 86–88; IISc: Vis. Fellow 88–90, Lecturer 90–92, Asst Prof. 92–98, Assoc. Prof. 98–2004, Prof. 2004–.

Scientific Work: Showed that quenching a quantum system through a quantum critical point or critical line produces defects whose density scales as a power of the quenching rate. Studied electronic transport in one-dimensional systems of intercating electrons with impurities and junctions; developed a renormalisation group approach to find the fixed points of such systems and the conductances as functions of the temperature. Studied the low temperature properties of dimersied and frustrated spin chains, and found the phase diagram for the cases of spin-1/2 and spin-1. Developed a nonlinear sigma-model approach to frustrated antiferromagnetic spin chains. Showed that alternating spin ferrimagnets and spin ladders can exhibit magnetisation plateaus. Showed that a chain of spin-1/2 triangles (realised in YCuO[illegible]) supports solition-like excitations. Contributed to the understanding of Calogero–Sutherland models by using collective field theory and generalised exclusion statistics. Formulated supersymmetric theories in three-dimensional sphere compactified to a sphere; this provided an understanding of R-parity and supersymmetry breaking.

Important Publications: (**1**) Density-matrix renormalisation-group studies of the spin-1/2 Heisenberg system with dimerization and frustration (1995) *Phys. Rev.* **B52,** 6581–6587. (**2**) Magnetization properties of some quantum spin ladders (1999) *Phys. Rev.* **B59**, 396–410. (**3**) Quantum solitons in the sawtooth lattice (1996) *Phys. Rev.* **B53**, 6401–6405. (**4**) Junction of several weakly interacting quantum wires: A renormalization group study (2002) *Phys. Rev.* **B66**, 165327-1–165327-12. (**5**) Quantum and statistical mechanics of anions (1991) *Nucl. Phys.* B **360**, 397–408.

Awards & Distinctions: Homi Bhabha Fellowship 2002–04 • IISc Jaya Jayant Award for Excellence in Teaching for Science 2007 • Assoc. Member: Abdus Salam ICTP Trieste, Italy 92–99

Sen, Kalidas

Elected: 1992
Position: Prof., Univ. of Hyderabad
Specialization: Density Functional Theory; Confined Systems, Information Theory
Date and Place of Birth: 9 June 1948; Seoni, Chhindwara, Madhya Pradesh
Parents: Bidyut Behari Sen and Sovana
Spouse and Children: Aloka; one *s* (Shaunak)
Address: School of Chemistry, University of Hyderabad, Hyderabad 500 046, India
Tel. (040) 2313 4809 (O), (040) 2301 0426 (R)
email: sensc@uohyd.ernet.in, kalidas.sen@gmail.com

Education: Saugar Univ.: BSc 67, MSc 69; IIT Kanpur: PhD 77.

Career: Univ. of Hyderabad, Dept of Chem.: Lecturer 77–81, Reader 82–85, Prof. 86–; Vis. Prof./Exchange Sci. at Univ. in USA, Japan, Canada, Germany, France, Spain and Belgium. Alexander von Humboldt Fellow 78.

Scientific Work: Research work deals with quantification of corner-stone concepts of chemistry such as ionic size, shell structure and aufbau principle, polarizability, electronegativity, hardness, and molecular similarity. Formulated the Z transition state (ZTS) method of calculating isoelectronic changes in energy. Proved a new theorem on the electrostatic potential minimum for negatively charged N-electron systems. Showed that the complete shell structure of atoms can be recovered from a log-log plot of radial density distribution function vs radial distance. The importance of self-interaction-correction in determining the stability of negative ions, a variety of novel applications of the Slater transition state (STS) method and derivation of several electron density based inequalities are among other significant contributions. Recent interest includes exploration of electronic structure of confined atoms and molecules and application of information theoretical measures to characterize electron-electron interactions.

Important Publications: **(1)** *Electronegativity, structure and bonding* (1987) Springer-Verlag, Heidelberg, pp 66. **(2)** *Chemical hardness, structure and bonding* (1993) Springer-Verlag, Heidelberg, pp. 80. **(3)** *Molecular similarity,* topics in current chemistry (1995) Springer-Verlag, Heidelberg, **173**, pp. 174. **(4)** *Electrostatic potential for atoms and molecules,* Topics in computational chemistry (1996) Elsevier, Amsterdam. **(5)** *Reviews in modern quantum chemistry: A celebration of the contributions of Robert G Parr* (2002) World Scientific Publishing Company, Singapore I and II (1804).

Memberships: Member: German Bunsen Soc. for Physical Chem.

Awards & Distinctions: INSA Young Scientist Medal 78 • UGC Career Award 78 • Humboldt Fellow 78 • Fulbright Scholar 92 • J C Bose National Fellowship 2009.

Sen, Prafulla Kumar*

Elected: 1958
Specialization: Open Heart Surgery under Hypothermia; Extracorporeal Circulation
Date and Place of Birth: 7 December 1915; Calcutta
Spouse: Marie
Last Address: 7/2, Diamond Harbour Road, Calcutta 700 027, India
***Deceased:** 22 July 1982

Education: Seth G S Med. College, Bombay: MB 38, MS 40.

Career: K E M Hospital & Seth G S Med. College, Bombay, Dept of Cardiovascular Surgery; Asst Surgeon 43–49, Head and Dir of Surgery 58–73; Rockefeller Foundation, USA: Vis. Fellow 49–51, Hon Surgeon 51–56, Travelling Fellow 56–57; Calcutta Med. Res. Inst., Centre for Cardiovascular Surgery: Chief.

Scientific Work: Special interest in experimental organ transplantation, surgery of the aorta, inflammatory diseases of the aorta. Performed the first human heart transplantation operation in India and Asia. Pioneered the development of cardiac surgery in India and initiated a series of newly described cardiovascular operations. Followed these efforts by the introduction of the heart-lung bypass which took giant strides subsequently. Seminal role in the growth of cardiovascular and thoracic surgery in India was due to the surgical prowess as to the genius in training a younger generation of fine surgeons and investigators. Detailed studies of aortoarteritis in India will perhaps outshine others as a major surgical classic.

Memberships: Fellow: American College of Surgeons; NASI • President: Assn of Surgeons of India; Thoracic Sec. of Assn of Surgeons of India.

Awards & Distinctions: B C Roy National Award • Vishnevsky Award • Amir Chand Prize • Padma Bhushan Award.

Sen, Sandeep

Elected: 2007
Position: Prof., IIT New Delhi
Specialization: Algorithms (Sequential and Parallel); Probabilistic Analysis and Randomization; Computational Geometry
Date and Place of Birth: 24 May 1962; Calcutta, West Bengal
Parents: Sisir Sen and Krishna
Spouse and Children: Anuradha; one s (Aniruddha)
Address: Department of Computer Science & Engineering, Indian Institute of Technology,
New Delhi 110 016, India
Tel. (011) 2659 1293 (O), (011) 2659 1605 (R), Mobile: 98681 14462
email: ssen@cse.iitd.ernet.in; URL: http://www.cse.iitd.ernet.in/~ssen

Education: IIT Kharagpur: BTech 84; Univ. of California: MS 86; Duke Univ., USA: PhD 89.

Career: AT & T Bell Labs, USA: Member, Tech Staff 90–91; IIT Delhi: Asst Prof. 91–97, Assoc. Prof. 97–2000, Prof. 2000–.

Scientific Work: Coauthor of one of the most well known mesh sorting algorithms called shearsort. Made one of the earliest contributions in the area of randomized computational geometry and designed several best known parallel algorithms for geometric problems. Coauthor of the dynamic sampling technique in computational geometry. One of the first papers on output-sensitive hidden-surface algorithm. Showed that direct mapped cache can efficiently emulate fully associative cache. Coauthor of optimal algorithms for graph spanners. Coauthor of linear time geometric clustering like k-means and k-median in any dimension for constant number of clusters.

Important Publications: **(1)** Parallel sorting in two dimensional VLSI models of computation (1989) *IEEE Trans. Comput.* 238–249. **(2)** Optimal parallel randomized algorithms for three-dimensional convex hulls and related problems (1992) *SIAM J. Computing* **21**, 3, 466–485. **(3)** Dynamic point-location in arrangements of hyperplanes (1992) *Discrete and Computational Geometry* **8**, 335–360. **(4)** Towards a theory of cache-efficient algorithms (2002) *J. of the ACM* **49**, 6, 828 –858. **(5)** A simple linear time algorithm for computing (2007) *Random Structures and Algorithms* **30**, 532–563.

Awards & Distinctions: AICTE Career Award • Young Scientist DST • IBM Faculty Award.

Sengupta, Surajit

Elected: 2006
Position: Sr Prof., IACS, Kolkata
Specialization: Condensed Matter Physics; Statistical Mechanics; Materials Science
Date and Place of Birth: 17 December 1962; Kolkata, West Bengal
Parents: Sujit Ranjan Sengupta and Kalpana
Spouse and Children: Sarmistha; one *d*
Address: Indian Association for the Cultivation of Science, Kolkata 700032, (on lien from) S N Bose National Centre for Basic Sciences, JD Block, Sector 3, Salt Lake, Kolkata 700 098, India
Tel. (033) 2473 4971/103 (O), (033) 2460 3212 (R)
email: camss@iacs.res.in, surajit@bose.res.in; URL: http://www.bose.res.in/~surajit

Education: IIT Kharagpur: BTech 84; IISc: PhD 92.

Career: IGCAR, Kalpakkam: Sci. Offr 94–2000; S N Bose Natl Centre for Basic Sci., Reader 2000–06, Assoc. Prof. 2006–08, Prof. 2008–; Centre for Advanced Materials, Indian Assn for the Cultivation of Sci., Sr Prof. 2008–.

Scientific Work: For the last few years, has been mainly working on nucleation of solids in solids and Martensites; stability and mechanical properties of nano-sized solids; dynamics of interfaces in solids; solids and liquids in quenched disorder; elastic strain fluctuations; properties of colloids and laser-induced freezing; two-dimensional melting; flux and skyrmion lattices.

Awards & Distinctions: IASc Assoc. 94–97.

Sen-Sarma, Parimal Kumar*

Elected: 1984
Specialization: Forest Entomology; Termites and Wood Borers; Insect Vectors of Plant Diseases; Tropical Forestry
Date and Place of Birth: 1 April 1929; Calcutta
Parents: Khagendra Lal Sen-Sarma and Mahamaya Devi
Spouse and Children: Aparna; one *s*, two *d*
Last Address: Flat 1, 2nd Floor, West Block, 302, N S C Bose Road, West Block, Calcutta 700 047, India
***Deceased:** 29 July 2002

Education: Calcutta Univ.: BSc Hons 49, MSc 51, PhD 65.

Career: Forest Res. Inst. and College, Dehra Dun: Res. Asst to Forest Entomologist 51–53, Res. Offr 53–63, Sr Res. Offr 63–73, Forest Entomologist 72–82, Dir of Biological Res.: 80–87; Forest Res. Lab. (Inst. of Wood Sc. & Technol.), Bangalore: Head 73–76; Birsa Agri. Univ., Ranchi, Faculty of Forestry: Dean 87–91; NEHU, Shillong: Sci. Emeritus (Forestry) 92–94; Kurukshetra Univ., Kurukshetra: Vis. Fellow in Zoology 94; Inst. fuer Angewandte Zoologie Der Universitat Wurzburg, Germany: FAO Fellow for advanced study in termite biology with visits to Federal Forest Res. Inst. Bonn, Univ. of Pavia (Italy), Univ. of Paris, Univ. of Berne, Switzerland.

Scientific Work: Discovered several new taxa including a new family. Demonstrated the capability of cellulase secretion by termites themselves and the role of intestinal microflora assisting in the digestion of hemicelluloses. Based on detailed investigations on anatomy of elephant louse, *Haematomyzus elephantis*, a new insect order, Rhyncophthiraptera, was created to accommodate this insect. Discovered vector of sandal spike disease for forest pest management. Enunciated for forest pest management, a novel approach through utilization of temporal and spatial plant diversity.

Memberships: Fellow: NASI; Indian Acad. of Wood Sci.; Entomological Soc. of India • Chairperson: Tropical Forest Pest Management, IUFRO 86 • President: Zoology, Entomology and Fisheries Sec. of Indian Sc. Congress.

Seshachar, Bagepalli Ramachandrachar*

Elected: 1953
Specialization: Protozoology; Cell Biology
Date and Place of Birth: 9 January 1908; Bagepalli, Kolar Dist, Karnataka
Parents: Bagepalli Ramachandrachar and Seshamma
Spouse: Rathnamma
Last Address: No. 50 (123), 10th Main Road, Malleswaram, Bangalore 560 055, India
***Deceased:** 25 January 1994

Education: Univ. of Mysore: BSc; Univ. of Calcutta: MSc; Univ. of Madras: DSc.

Career: Central College, Bangalore Dept of Zoology: Demonstrator 26–60; Univ. of Delhi, Dept of Zoology: Prof. and Head 60–71; IISc, Bangalore, Centre for Theoretical Studies: Prof. Emeritus 73–94.

Scientific Work: Initial work was on the biology and cytology of Apoda, an aberrant order of burrowing, limbless amphibian. This contribution has stood the test of time as a pioneering study. Selected the ciliate protozoons as a subject of research thereafter and original research findings on the origin and development of nuclear dimorphism in ciliate protozoons, especially the quantitative optical techniques employed, to estimate the nucleic acid content, are monumental. Published a steady stream of publications dealing with the ciliate macromolecules and conjugates, especially in *Spirostomum*, *Blepharisma*, *Vorticella* and *Frontonia*.

Memberships: Fellow: INSA 53; Zoological Soc. of London • President: Ethological Soc. of India; Acad. of Sanskrit Res.

Awards & Distinctions: Manjayya Udupa Gold Medal 26 • INSA Sunderlal Hora Award 65.

Seshadri, Conjeevaram Srirangachari

Elected: 1971
Position: Dir, Chennai Mathematical Inst.
Specialization: Algebraic Geometry
Date and Place of Birth: 29 February 1932; Conjeevaram, Tamil Nadu
Parents: Srirangachari and Chudamani
Spouse and Children: Sundari; two s
Address: Chennai Mathematical Institute, H1, Sipcot IT Park, Padur Post, Siruseri, Chennai 603 103, India
Tel. (044) 2747 0026-30 (O), (044) 2446 4572 (R), Mobile: 94440 87810
email: css@cmi.ac.in

Education: Univ. of Madras: BA Hons 53; Univ. of Bombay: PhD 58.

Career: TIFR, Bombay: 53–61, Reader 61–63, Assoc. Prof. 63–65, Prof. 65–75, Sr Prof. of Mathematics 75–84; IMSc, Chennai: Sr Prof. 84–91; SPIC Math. Inst., Chennai: Dir 91–99; Chennai Math. Inst.: Dir 99–.

Scientific Work: Contributed to fields like moduli of vector bundles: solution of Serre's problem on the affine plane; construction of the Picard variety on any complete variety; construction of the moduli spaces of vector bundles on a smooth projective curve of genus $g \geq 2$; further, (with M S Narasimhan) their transcendental characterization by unitary representations of certain Fuchsian groups; parabolic vector bundles on curves; vector bundles on singular curves. Proof of Mumford's conjecture, especially its proof for GL (2); and (with others) standard monomial theory generalizing a classical work of Hodge.

Memberships: Member: American Mathematical Soc. • Fellow: INSA 73; Royal Soc. of London 88; NASI 88; TWAS 88; Maharashtra Acad. Sci.

Awards & Distinctions: S S Bhatnagar Award 72 • TWAS Sci. Award • Padma Bhushan • INSA Srinivasa Ramanujan Medal 85.

Seshadri, Sekharipuram Narayana(Iyer)*

Elected: 1978
Specialization: Control Systems; Power Electronics
Date and Place of Birth: 15 March 1937; Myitkyina, Burma
Parents: S S Narayana Aiyer and C S Avayambal
Last Address: Reactor Control Division, Bhabha Atomic Research Centre, Bombay 400 085, India
***Deceased:** 2 February 1986

Education: Univ. of Madras: BE 58; BARC Training School 59; Massachusetts Inst. of Technol., USA: SM 63.

Career: BARC, Bombay: Sci. Offr 59–76, Head of Reactor Control Dn 76–82, Assoc. Dir 84–86.

Scientific Work: Applied expertise for the development of motor control systems for Indian Railways to save at least 20% of electrical energy. Developed an analog computer, an essential tool for design of control systems, and followed this up with drives for control rods to regulate the power level of nuclear reactors. Subsequent work was in servo mechanisms including the development of AC demonstration servo systems, temperature control systems using second harmonic magnetic amplifiers and certain auxiliary systems for recorder testing. All the control consoles and panels for the Tarapur Atomic Power Station and the servo control systems for the first satellite communication earth station at Arvi were designed and constructed by this group. Also responsible for the development of motor control systems of PURNIMA, the first fast reactor in the country and for the 2.3 m Vainu Bappu telescope at Kavalur. For the MHD demonstration project at Tiruchi, team designed and built a giant 300 tonne moving magnet capable of generating 2 Tesla fields. Participated in the design and installation of the control and remote operation elements of India's first peaceful nuclear explosion at Pokhran.

Awards & Distinctions: Vikram Sarabhai Research Award • Padma Shri 75 • S S Bhatnagar Prize 80 • VASVIK Award 84.

Seshadri, Tirukkanangindi Natesa*

Elected: 1954
Specialization: Engineering Physics; Wireless Communication
Date and Place of Birth: 15 June 1905; Tanjore
Last Address: 75, Rajendra Prasad Road, Nehru Nagar, Chromepet, Madras 600 044, India
***Deceased:** 1 November 1975

Education: Madras Univ.: BA Hons 26, MA 28.

Career: Madras Education Dept: Lecturer in Physics 27–46; Presidency College, Madras: Additional Prof. of Phys. 39–46; PWD, Madras: Head, Soil Engg Res. Station 46–55; CBRI, Roorkee: Asst Dir of Phys. 57–60; Vivekananda College, Madras: Principal 60–70.

Scientific Work: Was largely responsible for undertaking construction of large earth dams adopting modern methods of design and construction. Developed an engineering department where all kinds of materials are tested and original investigations undertaken to evolve new materials. Studies include micromesh prefiltration in slow sand filters; development of new electrolytic flocculator for treating municipal waters; determination of wilt points for irrigated crops; study of saline basin; corrosive studies in Mettur dam sluice gates; dehydration curves for soils, etc.

Important Publications: **(1)** *Handbook of physical constants and mathematical tables.*

Memberships: Fellow: Inst. of Phys., London.

Seshadri, Thiruvenkata Rajendra*

Elected: 1934
Specialization: Organic Chemistry; Chemistry of Natural Products; Pigments; Drugs and Pesticides
Date and Place of Birth: 3 February 1900; Kulitalai, Tiruchi, Tamil Nadu
Parents: Thiruvengadatha Iyengar and Namagiri Ammal
Spouse and Children: Kamala; three *d*
Last Address: Department of Chemistry, University of Delhi, Delhi 110 007, India
***Deceased:** 27 September 1975

Education: Univ. of Madras: BSc Hons; Univ. of Manchester: PhD 29.

Career: Univ. of Manchester, UK: Res. Fellow 27–30; Univ. of Madras: Res. Fellow; Agri. College and Res. Inst., Coimbatore: Res. Offr 30–33; Andhra Univ., Waltair: Reader and Head of Chem. 34–37, Prof. 37–49; Univ. of Delhi: Prof. and Head of Chem. 49–65, Emeritus Prof. 65–75.

Scientific Work: Chief contributions were in the area of oxygen heterocyclics which began with the isolation and structure elucidation of the flavonoid pigments of Indian plants, both aglucones and glucosides. Developed methods of methylation to facilitate the degradative study of the aglucones to get an insight into the structure of glucosides. For providing synthetic support to the structures of new members with a higher degree of oxygenation, methods were evolved for nuclear oxidation and reduction at select positions, partial methylation of hydroxyl groups and demethylation at required positions. These studies covered various groups of chemical compounds obtained from plant materials of many families and genera. Methods of total synthesis and interconversions in these areas were also elaborated. In later years, besides chemical methods modern instrumental methods were liberally employed in the investigations. Studies encompass, synthetic and instrumental approaches to the groups of anthoxanthins, anthocyanins, leucoanthocyanidins and quinonoid anhydrobases; chalkone epoxides; fura-coumarins, furanochromones, chromeno-chromones and chromeno-flavones, flavonones, and isoflavonones, and anthraquinones, xanthones, neoflavonoids, biflavonyls, pterocarpans, santalin pigments, bicoumarinyl, 4-phenyl coumarins and flavonolignans, C-glycosides, depsides, depsidones and terpenoids.

Memberships: Fellow: Royal Soc., London; INSA 42 • President: Indian Chemical Soc. of the Indian Pharmaceutical Assn; Indian Pharmaceutical Congress.

Awards & Distinctions: Acharya Prafulla Chandra Ray Medal • Acharya Jananendra Ghosh Medal • S S Bhatnagar Medal and INSA Meghnad Saha Medal • Padma Bhushan 63 • Andhra Univ., BHU, Delhi and Osmania Universities: DSc hc.

Seshagiri, Narasimhiah

Elected: 1974
Specialization: Electronics; Data Communication; Theoretical Physics; Theoretical Molecular Biology
Date and Place of Birth: 10 May 1940; Satyamangalam, Coimbatore Dist, Tamil Nadu
Parents: R Narasimhiah and Lakshmi Devi
Spouse and Children: Usha; one *s*, one *d*
Address: G-52, Narasimha Krupa, 9th D Cross, 40th Main, SBI Colony, J P Nagar, I Phase,
Bangalore 560 078, India
Tel. (080) 2245 4742 (R)
email: seshagiri_n@yahoo.com

Education: Univ. of Mysore: BE 61; IISc, Bangalore: PhD 64.

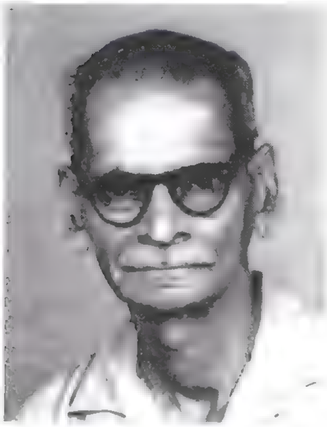
Career: IISc, Bangalore: UGC Res. Fellow 61–66; TIFR, Bombay, Computer Group: Vis. Sci. 66–67, Fellow 67–69, Sci. 69–71; Information, Planning & Analysis Group (IPAG), Dept of Electronics: Dir & Head 71–84; Natl Informatics Centre, Dept of Electronics: Executive Dir 75–84, Computer Development Dn: Dir 81–84, Addl Secretary and Special Secretary 84–88, Director General 84–88.

Scientific Work: Systems analysis & information technology, communication systems and computer-communication networks; automation & electronic instrumentation; R&D management methodology; development planning methodology, econometrics and operations research; molecular modelling of proteins. Proposed a new principle which gave a technique for analysing field structures of any shape in general and transmission lines of arbitrary cross-section in particular. Derived Maxwell's equations from certain most basic axioms utilising the theory of special relativity. Proposed a new concept in graph theory leading to an easy method of analysing complex multi-sector, multi-parameter economic systems. Developed a computer programme package for the design and trajectory simulation of multi-stage controlled satellite launch vehicles. Undertook a project to optimize the mix of thermal, hydel and nuclear power stations under Indian conditions.

Memberships: Fellow: NASI 88; IETE; Computer Soc. of India; Data for Development, France.

Awards & Distinctions: J C Ghosh Prize 65 • Vikram Sarabhai Res. Award for Systems Analysis & Management 74 • Asiad Jyoti Award 85 • Om Prakash Bhasin Award 89 • Udyog Jyoti Award 91.

Seshaiya, Rebala Venkata*



Elected: 1948
Specialization: Cytology; Classical Embryology; Chemical Embryology; Anatomy; Physiology; Oceanography; Biochemistry; Biometry
Date and Place of Birth: 8 February 1898; Nellore, Andhra Pradesh
Last Address: 1, Sivapuri Quarters, Annamalainagar, Chidambaram, India
***Deceased:** 28 February 1973

Education: Madras Univ.: BSc Hons 19, MA 20.

Career: MCC, Dept of Zoology: Demonstrator; P R College, Kakinada, AP: Lecturer; Mahanta High School, Tirupati: Headmaster; Annamalai Univ., Dept of Zoology: Prof. and Head; Centre of Advanced Study in Marine Biology, Porto Novo: Dir 70.

Scientific Work: Made original contributions to the embryology of mollusca. Discovered a polyzoan *Urnetella indica* (Seshaiya). A rare fish was named as *Cheloglobius seshiyae* by disciples.

Memberships: Fellow: INSA 61.

Seth, Bhoj Raj*

Elected: 1936
Specialization: Applied Mathematics; Applied Mechanics
Date and Place of Birth: 27 August 1907; Bhura, Punjab
Last Address: 41-42, Lucknow Road, Delhi 110 007, India
***Deceased:** 12 December 1979

Education: Univ. of Delhi: BA Hons 27, MA 29; Univ. of London: MSc 32, PhD 34, DSc 37.

Career: Hindu College, Delhi: Head of Maths Dept 37, concurrently Univ. of Delhi: Reader in Maths 37; Univ. of Iowa, USA: Vis. Prof. 49–50; IIT Kharagpur: Prof. and Head of Maths 51–66; Univ. of Wisconsin, USA, Maths Res. Centre: Vis. Prof. 61–62; Dibrugarh Univ.: Vice-Chancellor 66–71; Oregon State Univ., USA: Vis. Prof. 67–68; IIT, Delhi: Vis. Fellow 71, Prof. Emer. 77–79; Birla Inst. of Technol., Ranchi: Dir 71–77.

Scientific Work: Devoted work to problems of bending, vibration and stability of membranes and plates with triangular boundaries and to the application of finite strain theory to these problems. Determined the stage at which the constitutive equations change form. For this purpose, introduced the concept of transition. Showed that the transition concept does away with the necessity of introduction of semi-empirical relations like yield conditions, jump conditions, etc. Also showed that all transition fields like boundary layers, shocks, elastic-plastic deformations, creep and fatigue are subharmonic in character and that vorticity and spin effects play an important role in their growth. Asymptotic treatment of the finite torsion problem provides one of the few examples in which a plastic state resulting from large deformation is predicted by elastic theory.

Memberships: Fellow: INSA 61; Delhi School of Economics; Inst. for Social and Economic Change; Polish Acad. of Theoretical and Applied Mechanics; President: Maths Sec. of Indian Sci. Congress 55; Indian Soc. of Theoretical and Applied Mechanics; Calcutta Mathematical Soc.

Awards & Distinctions: USSR Acad. of Science Euler Medal 57 • B C Ray Award 77 • IIT Kharagpur: DSc h c 68.

Seth, Jagat Bihari*

Elected: 1935
Specialization: Optics
Date of Birth: 1893
Last address: Government College, Lahore, India
***Deceased:** February 1964

Education: Univ. of Lucknow: BSc; Univ. of Cambridge, UK: BA 21, MA, IES.

Career: Government College, Lahore: Lecturer, Prof. of Physics 21–47; Trg College, Jalandhar: Principal 47–50.

Sethi, Nihal Karan*

Elected: 1935
Specialization: Optics; Spectroscopy
Date of Birth: 8 July 1893
Parents: Sidh Karan Sethi and Jethi Bai
Spouse and Children: Marina; two *s*, six *d*
Last Address: Agra College, Agra, India
***Deceased:** 8 November 1969

Education: Univ. of Allahabad: BSc 13, MSc 15; Univ. of Calcutta: DSc 21.

Career: Meerut College, Meerut: Lecturer in Phys. 15–16; BHU, Varanasi: Lecturer/Reader 16–30; Agra College, Agra: Prof. in Physics 30–54, Principal 50–54; Expert Adv. Ctr on Sci. Glossary, Govt of India: Member 62–64; UGC Commission on Sci. & Tech. Terminology: Chmn 65–67.

Scientific Work: Pursued studies on Quetlet's rings earlier taken up by C V Raman in mica. Found that apart from the ring system, there were hyperbolic lines of minimum visibility. At oblique incidence, these loci of minimum intensity varied in shape and size, particularly when the mica sheet was rotated in its own plane. Performed experiments using chromatic emulsions prepared by shaking glycerine and turpentine to help explain the observations of Christianson.

Sethi, Pramod Karan*

Elected: 1989
Specialization: Orthopaedic Surgery; Prosthetics; Orthotics
Date and Place of Birth: 28 November 1927; Benaras
Parents: N K Sethi and Maina
Spouse and Children: Sulochana; one *s*, three *d*
Last Address: 8-10, Vivekananda Marg, Jaipur 302 001, India
***Deceased:** 6 January 2008

Education: Sarojini Naidu Med. College: MBBS Hons, MS 52.

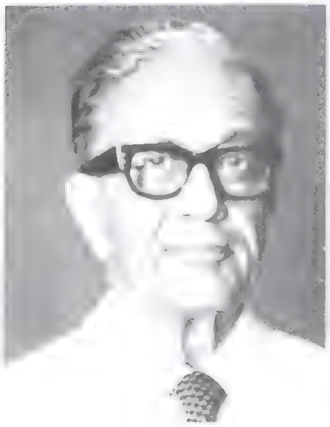
Career: SMS Medical College, Jaipur: Lecturer in Surgery, Prof. of Orthopaedics, Dir of Rehabilitation Res. Centre 52–82, Emeritus Prof. 82–2008; SDM Hospital, Jaipur: Hon. Consultant Orthopaedic Surgeon; Univ. of Garyonis, Libya: Vis. Prof. 79.

Scientific Work: Starting from scratch, established the orthopaedics department at Jaipur into one of the leading teaching and research establishments in the country. Has shown great concern for the physically handicapped and established the finest rehabilitation centre in the country. Development of aids for rural handicapped has now become an ongoing research activity in the workshop and a series of radically new designs, many of which present conceptually new ideas, for patients with polio, stroke and amputations are being continuously evolved. While investigating each of the foreign designs of artificial feet and legs, the group began to improvise an artificial foot that would respond more like a real one. A breakthrough came when a craftsman, using age-old sand-casting methods, produced a die for a natural appearing foot with a separated big toe, which could readily be cast in any size. Small Jaipur entrepreneurs who retread truck tyres used their scrap to vulcanize and shape differing hardnesses of rubber poured into the die and holding the iron shank reaching up to the leg stump. Eventually the firm-gripping, adaptable 'Jaipur foot' was made in light, medium or dark brown. Life-like legs were made by villagers while amputees watched. For polio patients inexpensive, lighter calipers also were fabricated quickly by skilled but unlettered local artisans.

Memberships: Vice President: Indian Orthopaedic Assn.

Awards & Distinctions: B C Roy Award 79 • Padma Shri 81 • Magsaysay Award 81 • Guinness Award for Sci. Achievement 82 • R D Birla Award 84 • Giants International Award 85 • Univ. of Rajasthan: DSc h c.

Sethna, Homi Nusserwanji



Elected: 1968
Specialization: Nuclear Engineering
Date and Place of Birth: 24 August 1923; Bombay
Parents: Nusserwanji H Sethna and Meherbai
Spouse and Children: Gooloo; one *s*, one *d*
Address: Panorama, 203, Walkeshwar Road, Malabar Hill, Mumbai 400 006, India
Tel. (022) 2202 8134 (O), (022) 2364 0812, (022) 2364 9723 (R)
email: hnsethna@yahoo.com

Education: Bombay Univ.: BSc 42, BSc Tech. 44; Univ. of Michigan, USA: MSE 46.

Career: Indian Rare Earths Ltd, Alwaye 49; Atomic Energy Establishment (BARC), Bombay: Chief Sci. Offr 59, Dir of Engg Group, Dir of BARC and Member of R&D (AEC) 66–72, Dir of Power Projects Engg Dn; AEC: Chmn and Secretary to Govt, DAE: 72–83; Andhra Valley Power Supply Co. Ltd: Dir, Chmn & Managing Dir; North E. Univ.: Chancellor.

Scientific Work: Responsible for the design, construction and commissioning of several national projects like the Rare Earths Plant at Alwaye, which marked the beginning of the exploitation of nuclear materials in India; thorium plant at Trombay and the plant for production of nuclear-grade uranium metal, 40 MW research reactor (CIRUS), plutonium plant at Trombay, and uranium mill at Jaduguda, Bihar.

Memberships: Fellow: INSA 70; INAE 87; Inst. of Engineers • President: INSA; Indian National Acad. of Engg; Maharashtra Acad. of Sci. • Member: Sci. Advisery Committee to International Atomic Engg Agency; Sci. Advisery Committee to the Govt of India Cabinet; Royal Swedish Acad. of Engineering.

Awards & Distinctions: Padma Shri 59 • S S Bhatnagar Award 60 • Padma Bhushan 66 • Walter Puckey Prize 71 • William Jones Memorial Medal 74 • Padma Vibhushan 75 • Vishwa Gurjari Award 85 • Dadabhai Naoroji Memorial Prize 85 • Jawaharlal Nehru Award 89 • Bombay Univ. LLD hc 74, DTech hc from Marathwada Univ. 73, Roorkee Univ. 75, Karnatak Univ. 75, IIT Bombay 75, Orissa Univ. of Agri. & Technol. 76, Mysore Univ. 76, Utkal Univ. 77, Andhra Univ. 82, Sri Venkateswara Univ. 83.

Sethunathan, Nambrattil

Elected: 1986
Specialization: Environmental Microbiology
Date and Place of Birth: 2 June 1937; Madras
Parents: Thaiyezhath Bhaskara Menon and Meenakshi Amma
Spouse and Children: Remadevi; two *d*
Address: Flat No. 103, Ushodaya Apartments, Sri Venkateswara Officers Colony, Ramakrishnapuram,
Secunderabad 500 056, India
Tel. (040) 2799 0758 (R)
email: sethunathan@hotmail.com

Education: Univ. of Madras: BSc 56, MSc 58, PhD 66.

Career: Univ. Botany Lab., Madras: Res. Asst 58–59, CSIR JRF/SRF 60–66; IRRI, Philippines: Postdoc Fellow 66–68, Vis. Asst Pesticide Chemist 68–71; CRRI, Cuttack: Sci. 71–82, Head of Dn of Soil Sci. and Microbiology 81–87, Principal Sci. 83–2000; CSIRO Land & Water Lab, Osmond, Australia: GRDC Vis. Sci. 2000–02.

Scientific Work: Demonstrated that loss of control of a pest after regular use of a pesticide in agricultural soils (tropical rice soils) is related to its accelerated degradation by adapted microorganisms. Isolated *Flavobacterium* sp. ATCC 27551, which is one of the microorganisms most intensively studied in relation to molecular aspects of enhanced biodegradation. Researches show that microorganisms play a major role in the detoxification of many commonly used organophosphorus (methyl parathion, fenitrothion, now banned ethyl parathion) and carbamate (carbofuran) insecticides in tropical rice soils. Group isolated bacteria (*Sphingomonas paucimobililis*) capable of degrading not only alpha and gamma isomers, but also thermodynamically stable beta and delta-isomers of hexachlorocyclohexane (HCH) under aerobic conditions.

Memberships: Fellow: INSA 90; NAAS 91; NASI 97.

Shabde, N G*

Elected: 1942
Specialization: Spherical Hormones; Special Functions; Field Theory
Date and Place of Birth: 12 April 1906; Akot, Bhandra District
Parents: G K Shabde and Radhabai
Spouse and Children: Tara; two *s*, two *d*
Last Address: SSC Examination Board, 15, Connaught Road, Bounty Hall, Poona 411 001, India
***Deceased:** 1961

Education: Univ. of Nagpur: DSc; Univ. of Edinburgh, UK: DSc.

Career: College of Sci., Nagpur: Prof. of Maths 35; King Edward College, Amravati: Principal; Mahakoshal Mahavidyalaya, Jabalpur: Principal; Vidarbha Mahavidyalaya, Amravati: Principal 55–60; SSC Examination Board, Poona: Chmn 60–61.

Shah, Madhavlal Sukhlal*

Elected: 1934
Specialization: Chemistry
Last Address: 8, Govt Servant's Co-operative Housing Society, Navrangpura, Ahmedabad 380 009, India
***Deceased**

Education: MSc, PhD, DIC.

Career: Gujarat College, Ahmedabad, Dept of Chem.: Lecturer, Principal 51; MR Sci. Inst., Gujarat, Dept of Chem.; Prof.; Karnatak College, Dharwad: Principal 50; Vithal-bai Patel Mahavidyalaya Arts and Sci. College, Vallabh Vidyanagar: Principal 56–59; Umedram Panchal Arts College and Sarvodaya Sci. College, Gujarat: Principal 60.

Shah, N M*

Elected: 1934
Last Address: MTB College, Surat, India
***Deceased**

Career: MTB College, Surat: Principal.

Shah, Nimish Arun

Elected: 2003
Position: Prof., TIFR, Mumbai
Specialization: Ergodic Theory of Flows on Homogeneous Spaces of Lie Groups and its Applications to Number Theory
Date and Place of Birth: 4 February 1967; Rajkot, Gujarat
Parents: Shah Arun Dhirubai and Jyoti Arun
Spouse and Children: Shilpa; one *s*, one *d*
Address: School of Mathematics, Tata Institute of Fundamental Research,
Homi Bhabha Road, Mumbai 400 005, India
Tel. (022) 2278 2353 (O), (022) 2280 4943 (R)
email: nimish@math.tifr.res.in; URL: www.math.tifr.res.in/~nimish

Education: Gujarat Univ., BSc 87; Bombay Univ., MSc 93; PhD 95.

Career: TIFR, Res. Scholar 87–90; Res. Assoc 90–94, Fellow 94–98, Reader 98–2001, Assoc Prof. 2001–07, Prof. 2007–; Inst. for Adv. Studies, Princeton, Member 96–97; Math. Sci. Res. Inst., Berkeley: Postdoc Fellow 91–92; Yale Univ.: Vis. Asst Prof. 97–98.

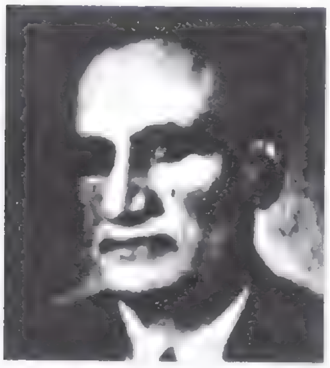
Scientific Work: Contributed significantly to the developement of ‘linearization technique’ in the study of unipotent flows on homogeneous spaces; and applied it to obtain asymptotic counting of integral points on group varieties; and to prove non improvability of Dirichlet's theorem on diophantine approximation for points on curves.

Important Publications: **(1)** Uniformly distributed orbits of certain flows on homogeneous spaces (1991) *Math. Ann.* **289**, 2, 315–334. **(2)** Limit distributions of polynomial trajectories on homogeneous spaces (1994) *Duke Math. J.* **75**, 3, 711–732. **(3)** Limit distributions of expanding translates of certain orbits on homogeneous spaces (1996) *Proc. Indian Acad. Sci. Math. Sci.* **106**, 2, 105–125. **(4)** Unipotent flows and counting lattice points on homogeneous varieties (1996) *Ann. of Math.* (2) **143**, 2, 253–299.

Memberships: Fellow: NASI 2001.

Awards & Distinctions: IASc Assoc. 93–98, INSA Young Scientist Award 96 • Swarnajayanti Fellowship 2005–10 • Elsevier Young Scientist Award 2007.

Shah, Ramanlal Chhaganlal*



Elected: 1934
Specialization: Chemistry of Natural and Synthetic Products
Date and Place of Birth: 7 October 1899; Pardi, Bulsar, South Gujarat
Spouse and Children: Kusumben; two *s*, one *d*
Last Address: c/o Sri Mahendra D Shah, 234, Walkeshwar Road, Bombay 400 006, India
***Deceased:** 3 September 1969

Education: Univ. of Bombay: BA Hons 20, BSc 21, MSc; IISc, Bangalore: AIISc; Univ. of London: PhD 31.

Career: Royal Inst. of Sci., Bombay: 25–29, Prof. of Organic Chem. and Principal 39–50; Ismail Yusuf College, Bombay: Head of Chem. Dept 31–39; NCL, Pune: Asst Dir and Head of Organic Dn 50–59, Dy Dir 59–61; Mysore Chemicals and Fertilizers: Development Offr 42–43; Dept of Supply, Govt of India: Dy Dir of Chemicals.

Scientific Work: In pure chemistry, work is both in the field of natural products and on the synthetic side. In the field of natural products studied the chemistry of oroxylin, a constituent of the root bark of *Oroxylum indicum* Went; Wogonin, a constitutent of the roots of *Scutellaria bacalensis*; calycopterin, a constituent of the leaves of *Calycopteria floribunda*; cardanol, the main constituent of the cashew nut shell liquid and pristimerin, isolated from the root bark of *Pristimera indica*. The chemical examination of the indigenous medicinal plants *Swertia decussata* and *Chirata* was carried out and the structures of swertinin and decussatin established. Geijerin, a naturally occurring coumarin derivative and dihydrorobinetin were synthesized. New syntheses of naturally occurring hydroxyxanthones, lichexanthone and gentisein, were also developed. On the synthetic side, work lay in the synthesis of various imidochlorides and study of their reactions; gamma-substitution in the resorcinol nucleus and studies on the fixation of double bonds in the aromatic nucleus; studies in the synthesis of various oxygen heterocycles such as coumarins, chromones and flavones and nitrogen heterocycles such as quinolines; studies on the pattern of substitution in various oxygen heterocycles; and synthesis of C-alkyl-resorcinols. Developed the use of anhydrous aluminiumm chloride dissolved in dry ether in the Gattermann reaction on some resorcinol derivatives and obtained gamma-substitution in the resorcinol derivatives.

Memberships: Fellow: INSA 41 • President: Chem. Sec. of Indian Sci. Congress 51; Indian Chemical Soc.

Awards & Distinctions: Acharya P C Ray Medal • K G Naik Gold Medal.

Shah, Swarupchand Mohanlal*

Elected: 1951
Specialization: Integral Functions; Number Theory; Differential Equations
Date and Place of Birth: 30 December 1905; Dessa, Bombay
Parents: D Mohanlal and Chuni Behn
Spouse and Children: Mafat Devi; two s
Last Address: 419, E-Lima Avenue, A D A, Ohio 45810, USA
***Deceased:** 21 April 1996

Education: Bombay Univ.: BA Hons 27; Univ. of London: MA 30, PhD 42, DLitt 51.

Career: Aligarh Univ.: Sr Lecturer 30–47, Reader/Assoc. Prof. 47–52, Prof. 52–58; Univ. of Wisconsin, USA 58–59, North Western Univ., USA 59–60, Univ. of Kansas, USA 60–66: Vis. Prof.; Univ. of Kentucky, USA: Prof. 66–76, Emeritus Prof. 76, Distinguished Prof. of Faculty of Arts & Sci. 69–70.

Scientific Work: Has made significant contributions to complex analysis, Fourier analysis, and differential equations. Has been working on growth and index problems of a class of differential equations.

Important Publications: (1) *Introduction to real variable theory* (1972) Prentice Hall (2) *Summability theory and applications* (1972) Van Nostrand Reinhold (3) *Theory and applications of Fourier analysis* (1981) Marcel Dekker.

Memberships: Member: American Mathematical Soc.; Indian Mathematical Soc.; Mathematical Assn of America; Sigma Xi • Fellow: Royal Soc. of Edinburgh 56; INSA 52.

Awards & Distinctions: Univ. of Kentucky, USA: DSc (hc) 79.

Shaha, Chandrima

Elected: 2005
Position: Sr Sci., NII, New Delhi
Specialization: Cell Biology; Biochemistry
Date and Place of Birth: 14 October 1952; Kolkata, West Bengal
Parents: Shambhu Shaha and Karuna
Address: National Institute of Immunology, Aruna Asaf Ali Marg, New Delhi 110 067, India
Tel. (011) 2670 3627 (O), (011) 2670 3602 (R)
email: cshaha@nii.res.in; chandrimas@gmail.com
URL: http://202.54.226.233/jsp/faculty/scientist_chandrima.html

Education: Calcutta Univ.: BSc 72, MSc 74, PhD 80.

Career: NII: Staff Sci. 84–.

Scientific Work: The primary research interest is to understand mechanisms of cell death in both unicellular and multicellular model systems and possible defensive mechanisms used by cells to prevent such death. In the unicellular model system of the trypanosomatid parasite, *Leishmania donovani*, research established the mode of apoptotic death prevalent in this unicellular model in the free swimming forms as well as during host-pathogen interactions. Pivotal role of cellular cations during apoptotic death of *Leishmania donovani* was established. Other research established the importance of the intrinsic pathway of apoptosis in the event of environmental estrogen insult in the multicellular model of spermatogenic cells. Clues to possible preventive mechanisms in the event of estrogen exposure have been shown. In addition, the functional role of a group of defensive enzymes called the glutathione S-transferases in the spermatogenic cells survival opened a new area of investigation clarifying how defects in glutathione S-transferase expression might lead to infertility.

Important Publications: **(1)** Estrogen induced spermatogenic cell apoptosis occur via the mitochondrial pathway: Role of superoxide and nitric oxide. (2005) *J. Biol. Chem.* **280**, 6181–6196. **(2)** Changes in cytosolic Ca^{2+} levels regulate *Bcl-xS* and *Bcl-xL* expression in spermatogenic cells during apoptotic death. (2006) *J. Biol. Chem.* **281**, 2133–2143. **(3)** Up-regulation of BI-2 through ERK phosphorylation is associated with human macrophage survival in an estrogen microenvironment. (2007) *J. Immunol.* **179**, 2330–2338. **(4)** Crucial role of cytosolic tryperoxidase in *Leishmania donovani* survival, drug response and virulence (2008) *Mol. Microbiol.* **L8**, 372–391. **(5)** Estrogen modulates human macrophage apoptosis via differential signaling through estrogen receptor-α and β (2009) *J. Cell. Mol. Med* (Doi: 10.1111/j.1582–4934.2008.00679.X)

Memberships: Fellow: NASI 99; INSA 2008; Indian Immunology Soc.; Soc. for Study of Reproduction, India; Free Radical Soc., India.

Awards & Distinctions: Shakuntala Amirchand Award, ICMR 92 • Special Award for 50th Anniv. of DNA Double Helix Discovery, DBT 2003 • J C Bose Natl Fellowship 2009.

Shaila, Melkote Subbarao

Elected: 1993
Position: Prof., IISc, Bangalore
Specialization: Molecular Virology; Viral Immunology
Date and Place of Birth: 10 October 1945; Mysore, Karnataka
Parents: M N Subba Rao and Kamala
Address: Department of Microbiology and Cell Biology, Indian Institute of Science,
Bangalore 560 012, India
Tel. (080) 2293 2702/2360 0139 (O), (080) 2360 0375 (R)
email: shaila@mcbl.iisc.ernet.in; URL: http://mcbl.iisc.ernet.in/shaila.htm/

Education: Bangalore Univ.: BSc 65, MSc 67; IISc, Bangalore: PhD 74.

Career: Yale Univ., USA, Dept of Molecular Biophys. and Biochem.: Res. Assoc. 74–76; IISc, Bangalore, Dept of Microbiology and Cell Biology: Res. Assoc., Pool Offr and Sr Res. Fellow 77–79, Lecturer 79–84, Asst Prof. 84–90, Assoc. Prof. 90–96, Prof. 96–.

Scientific Work: Contributed substantially to the understanding of the rinderpest virus proteins, genes, protective immune response to individual glycoproteins of the virus; developed a subunit vaccine for rinderpest virus by recombinant DNA methods; and also a stable, recombinant antigen for sero monitoring work; using molecular diagnosis, discovered the presence of Pestes de petits ruminants virus in India. Developed an edible vaccine for PPR and a pen-side diagnosis kit for PPR.

Important Publications: **(1)** Peste des petits ruminants infection of ovines in India. (1989) *Veterinary Record* **125**, 602. **(2)** Geographic distribution and epidemiology of peste des petits ruminants viruses. (1996) *Virus Res.* **43**, 149–153. **(3)** Recombinant hemagglutinin protein of rinderpest virus expressed in insect cells induces humoral and cell mediated immune responses in cattle. (2001) *Vaccine* **19**, 3870–3976. **(4)** Oral immunisation of cattle with haemagglutinin protein of rinderpest virus expressed in transgenic peanut induces specific immune responses (2003) *Vaccine* **21**, 3282–3289. **(5)** Recombinant L and P protein complex of rinderpest virus catalyses mRNA synthesis *in vitro* (2008) *Virus Research* **135** (1), 150–154.

Awards & Distinctions: INSA Young Scientists Medal 74 • C V Raman Award of Acoustic Soc. of India 82 • Rockefeller Foundation Biotechnology Award 86–88, 93–95 • National Senior Woman Bioscientist Award of DBT 2003.

Shanbhag, Bhagyashri Achut

Elected: 2004
Position: Prof., Karnatak Univ., Dharwad
Specialization: Comparative Endocrinology and Reproduction (Vertebrates); Herpetology; Animal Behaviour
Date and Place of Birth: 2 November 1950; Kodibag, Karnataka
Parents: Venkat V Bhujle and Hirabai
Spouse: Achut R Shanbhag
Address: Department of Zoology, Karnatak University, Dharwad 580 003, India
Tel. (0836) 244 8047 (O), (0836) 274 0673 (R), Mobile: 94481 84536
email: bhagyashrishanbhag@gmail.com

Education: Karnatak Univ.: BSc 70, MSc 72, PhD 77.

Career: SPC College, Goa: Biol. Teacher 77–79, Lecturer in Zoology 2001; 79–81; Karnatak Univ.: Lecturer 81–92; Reader 92–2000, Prof. 2000–; Commonwealth Fellowship, UK 94.

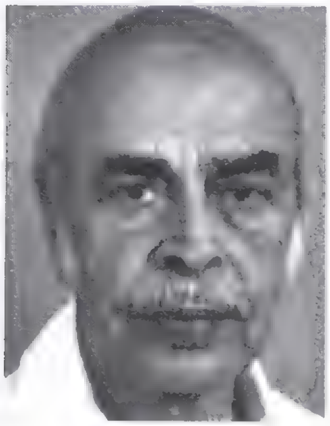
Scientific Work: Has made outstanding contributions to reproductive and behavioural ecology of lizards using *Calotes versicolor* as model. Combined both laboratory and field studies in elucidating mechanisms controlling reproductive events. Has been successful in raising and breeding *C. versicolor* in captivity, first time in India. Studies showed how the lizards trade-off energy for manipulation of clutch and egg sizes, oviductal egg retention under unfavourable conditions for as long as 6 months, embryonic diapause and mechanism of egg retention by lowering the body temperature and by the secretion of progesterone by adrenal gland (rather than from the ovaries) facilitating oviductal egg retention thereby providing the first experimental proof to the 'stress induced evolution of viviparity' hypothesis. Also made significant contribution to behavioural ecology of *Sitana ponticeriana* and *Psammophilus dorsalis* by shedding light on population density, activity pattern, perching behaviour, territoriality and language of communication.

Important Publications: **(1)** Induction of ovulation, fertilization and development of embryo in captivity in the garden lizard, *Calotes versicolor.* (1993) *J. Herpetol.* **27**, 480–481. **(2)** Maternal size determines clutch mass while breeding timing influences clutch and egg sizes in the tropical lizard, *Calotes versicolor* (Agamidae) (2000) *Copeia*, 1062–1068. **(3)** Plasma progesterone levels and luteal activity during gestation and prolonged oviductal egg retention in the tropical lizard, *Calotes versicolor.* (2001) *Gen. Comp. Endocrinol.* **123**, 73–79. **(4)** Members of opposite sex mutually regulate gonadal recrudescence in the lizard, *Calotes versicolor* (Agamidae) (2002) *J. Biosci.* **27**, 529–537. **(5)** Lowering body temperature induces embryonic diapause during prolonged egg retention in the lizard, *Calotes versicolor* (2003) *Naturwissenschaften* **90**, 32–35.

Memberships: Fellow: INSA 2007; NASI 2008; American Soc. for Ichthyologists and Herpetologists (ASIH).

Awards & Distinctions: Young Scientist Award of Karnataka Assn for Advancement of Sci. Bangalore 84.

Shankar, Jagdish*



Elected: 1975
Specialization: Nuclear and Radiation Chemistry; Solid State Chemistry
Date of Birth: 3 October 1912
Children: six s
Last Address: 4, Saras Baug, Deonar, Bombay 400 088, India
***Deceased:** 31 January 1992

Education: Univ. of Bombay: BSc 32, MSc 34, PhD 39; Univ. of Columbia, USA: MS 47.

Career: Royal Inst. of Sci., Bombay: Demonstrator and Lecturer 35–38; St John's College, Agra: Lecturer in Physical Chem. 39–42; Maharaja College, Jaipur: Prof. and Head of Chem. 42–43; Delhi Univ.: Lecturer and Reader 43–49; BARC, Bombay: Head of Chem. Dn 49–72.

Scientific Work: Established well-equipped laboratories for analytical chemistry, spectroscopy and advanced research in the emerging field of recoil chemistry. Initiated and encouraged research in solid state chemistry, X-ray and electron diffraction, thermal analysis and radiation chemistry. Chemical engineering background was useful in establishing the solvent extraction, ion exchange, distillation and zone refining units for preparing high purity materials required in the exacting nuclear and electronic industries. Based on the developmental work carried out in the division, a high purity materials plant was set up as part of the nuclear fuel complex at Hyderabad to manufacture B, Nb, Ta, Se, Au, etc. The risk-prone chemical operation of removing the biofouling of the CIRUS nuclear reactor was successfully carried out.

Memberships: Fellow: INSA 69 • President: Chemical Sec. of Indian Sci. Congress.

Shankar, Pattamadai Narasimhan

Elected: 1992
Specialization: Engineering Science ; Fluid Dynamics
Date and Place of Birth: 13 August 1944; Bombay
Parents: P S Narsimhan and Lakshmi
Spouse and Children: Priti; one *s*, one *d* (Nachiket, Mridula)
Address: 33/1, Kasturba Road Cross, Bangalore 560 001, India
Tel. (080) 2221 7404 (R)
email: pn_shankar55@rediffmail.com

Education: London Univ.: BSc Hons 64; Caltech, USA: PhD 68.

Career: General Electric R & D Centre, USA: 68–70; Univ. of Maryland, USA, Aerospace Dept: Asst Prof. 70–72; NAL, Bangalore: Sci. 72.

Scientific Work: Made contributions to various aspects of fluid dynamics. Earlier work dealt with liquid-vapour phase change, acoustic refraction, the aerodynamics of windmills, inviscid shear flows and nonlinear free surface flows. Later contributions deal mainly with low Reynolds number flows in containers.

Important Publications: **(1)** A kinetic theory of steady condensation (1970) *J. Fluid Mech.* **40**, 385. **(2)** On the shape of a two-dimensional bubble in uniform motion. (1992) *J. Fluid Mech.* **244**, 187. **(3)** Fluid mechanics in the driven cavity. (2000) *Annu. Rev. Fluid Mech.* **32**, 93. **(4)** Eigenfunction expansions on arbitrary domains (2005) *Proc. R. Soc.* **A461**, 2121–2133. **(5)** *Slow viscous flows – qualitative features and quantitative analysis by the method of complex eigenfunction expansions* (2007) Imperial College Press, London.

Awards & Distinctions: ASME Knapp Award 71.

Shanmugam, Govindaswamy

Elected: 1991
Position: Dir, Oncophyta Labs; Madurai
Specialization: Molecular Biology, Cancer Biology and Medicinal Plants
Date and Place of Birth: 18 December 1938; Vallampadugai, Tamil Nadu
Parents: K R Govindaswamy and Irumalarkanni
Spouse and Children: Kasthuri; two *s*, one *d* (Pari, Manivannan, Kalai Selvi)
Address: Oncophyta Labs, 2/130 Kalvi Nagar, Near Madurai Kamaraj University, Madurai 625 021, India
Tel. (0452) 245 8228 (R), Mobile: 94432 58228
email: shan1938@yahoo.com

Education: Annamalai Univ.: BSc 59, MSc 61; Osmania Univ.: PhD 68

Career: Guindy Engg College, Madras and RRL, Hyderabad: Sci. Asst Res. Fellow, Asst Lecturer 62–69; St. Louis Univ. Medical Centre, Inst. for Molecular Virology, USA: Res. Assoc. 70–73, Asst Prof. 73–78; Vanderbilt Univ., School of Medicine, USA, Cell Biology: Vis. Prof. 87; Madurai Kamaraj Univ., School of Biological Sci., Dept of Biochem.: Reader 79–85, Prof. 85–97, Sr Prof 97–99; INSA Sr Sci and Emeritus Prof. 99–2008; Oncophyta Labs, Madurai: Dir 2008–.

Scientific Work: Pioneering work on the replication of RNA and DNA tumour viruses. Discovered a double-stranded RNA-specific nuclease involved in the processing of ribosomal and retroviral RNAs. Also identified an endonuclease from human placenta which is capable of cleaving Holliday junctions. Has also characterized four types of early growth response proteins during the cellular signal transduction process; shown the involvement of mutations in the tumour suppressor gene p53 in tobacco related oral cancer in humans. Has shown the predominant role of hypermethylation of cancer related genes in the genesis of oral cancer; also identified a potent anticancer agent called cleistanthin A from an indigenous plant.

Important Publications: **(1)** Partial purification and characterization of ribonuclease III like enzyme activity from cultured mouse embryo cells (1978) *Biochemistry* **17**, 1552. **(2)** Subcellular distribution of newly synthesized virus specific polypeptides in Moloney leukemia virus infected cells (1979) *J. Virology* **29**, 385. **(3)** Anticancer potential of Cleistanthin A isolated from the tropical plant *Cleistanthus collinus* (1999) *Oncology Res.* **11**, 225. **(4)** Promoter hypermethylation profile of tumour associated genes in oral squamous cell carcinoma (2003) *Int. J. Cancer*, **105**, 41. **(5)** Polymorphism in ADH and MTHFR genes in oral squamous cell carcinoma of Indians (2008) *Oral Diseases* **14**, 633.

Memberships: Fellow: INSA.

Awards & Distinctions: ICMR Award 84.

Sharma, Anurag

Elected: 2002
Position: Prof., IIT, New Delhi
Specialization: Fibre & Integrated Optics, Gradient-Index Optics; Applied Optics
Date and Place of Birth: 7 May 1955; Bareilly, Uttar Pradesh
Parents: Shiv Sharan Sharma and Mahendra Devi
Spouse and Children: Enakshi Khular; two s (Ayush, Akarsh)
Address: Department of Physics, Indian Institute of Technology, New Delhi 110 016, India
Tel. (011) 2659 1350 (O), (011) 2686 7022 (R), Mobile: 98183 55884
email: asharma@physics.iitd.ac.in

Education: Agra Univ.: BSc 72; IIT Delhi: MSc 74, MTech 76, PhD 79.

Career: IIT Delhi: Sr Res. Asst 78–80; Sr Sci. Offr 80–81, Lecturer 81–86, Asst Prof. 86–91, Assoc. Prof. 91–95, Prof. 95–; Alexander von Humboldt Fellowship 82–83; TWAS South-South Fellowship 91; Homi Bhabha Fellowship 90–92.

Scientific Work: Has made several significant contributions in the area of modelling and analysis of optical waveguiding and imaging devices and components. Developed a new method for total field propagation through waveguiding structures, which is numerically very efficient. Developed a whole new concept, based on the variational principle, for modelling and analysing diffused channel waveguides. Recently, through analysis of own and other methods for waveguidance, has shown a new relationship between the perturbation method and the variational method. Developed in a series of papers, new methods and algorithms for each of the steps involved in the design and analysis of gradient-index (GRIN) optical imaging systems. This contribution, made in the early eighties, was recognized immediately as a significant contribution in the field. Also developed very useful and accurate models for single mode optical fibres.

Important Publications: **(1)** The fundamental mode of graded-index fibers: Simple and accurate variational methods (1982) *Opt. Quantum Electron.* **14**, 7–15. **(2)** Tracing of rays through graded-index media: A new method (1982) *Appl. Opt.* **21**, 984–987. **(3)** Single-mode optical waveguides and directional couplers with rectangular cross-section: A simple and accurate method of analysis (1988) *IEEE J. Lightwave Technol.* **LT-6**, 1119–1125. **(4)** Analysis of fiber directional couplers and coupler half blacks using a new simple, model for single mode fibres (1990) *IEEE J. Lightwave Technol.* **8**, 143–151. **(5)** New method for non-paraxial beam propagation (2004) *J. Opt. Soc. Am.* **A21**, 1082–1087.

Memberships: Fellow: NASI 98; INSA 2004; INAE 2009; Opt. Soc. Am. 2004.

Awards & Distinctions: INSA Young Scientist Medal 86 • IETE S K Mitra Prize 87 • INSA A K Bose Memorial Prize 91 • S S Bhatnagar Prize 98 • UGC M N Saha Award 99.

Sharma, Archana*

Elected: 1977
Specialization: Plant and Human Cytogenetics
Date and Place of Birth: 16 February 1932; Pune, Maharashtra
Parents: Nandipati Mookerjea and Renuprova
Spouse: Arun Kumar Sharma
Last Address: Centre for Advanced Study in Cell & Chromosome Research, Department of Botany, University of Calcutta 35, Ballygunge Circular Road, Calcutta 700 019, India
***Deceased:** 14 January 2008

Education: Univ. of Rajasthan: BSc 49; Univ. of Calcutta: MSc 51, PhD 55, DSc 60.

Career: Univ. of Calcutta, Dept of Botany, Centre of Advanced Study in Cell and Chromosome Res.: Reader 67, Prof. of Genetics 72, HOD Botany 80; CSIR Emertius Sci.

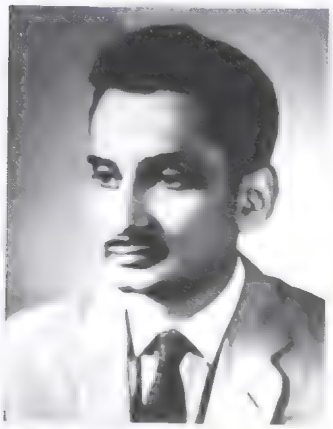
Scientific Work: Developed new techniques for studying chromosome structure, applied throughout the world, and deduced evidences of a new concept of speciation in vegetatively reproducing plants. Other studies relate to induction of division in adult nuclei and cause of polyteny in differentiated tissue in plants; cytotaxonomic investigation on flowering plants; assessment of chromosomal and genetical polymorphism in normal human populations in eastern India and their comparison with pathological conditions; differentiation patterns in human fibroblasts in relation to polyteny as a factor in ageing; genetic polymorphisms in relation to environmental agents on living systems; clastogenic and mutagenic effects of various pesticides and metals on multiple test systems; assessment of genotoxic and clastogenic activity of environmental agents in subtoxic doses in exposed populations in relation to different modifying factors like diet, genetic predisposition, drugs, etc.; and use of dietary factors and plant products in modulating the cytotoxicity of known pollutants – metals and pesticides.

Important Publications: *Chromosome Techniques. Theory and Practice* (1965, 1972 and 1980) Butterworth.

Memberships: Member: International Acad. of Science, Germany; INSA Council • Fellow: INSA; NASI.

Awards & Distinctions: S S Bhatnagar Award 75 • UGC J C Bose Award 74, 80 • FICCI Award 83 • Birbal Sahni Medal 84 • Padma Bhushan 84.

Sharma, Arun Kumar



Elected: 1975
Specialization: Cytogenetics; Cytochemistry; Cell Biology
Date and Place of Birth: 31 December 1924; Calcutta
Parents: Charu Chandra Sharma and Shovamoyee
Spouse: Archana
Address: Flat 2F2, Meghmallar, 18/3 Gariahat Road, Kolkata 700 019, India
Tel. (033) 2440 5802 (R)
email: nuclaks@cal2.vsnl.net.in

Education: Univ. of Calcutta: BSc 43, MSc 45, DSc 55.

Career: Univ. of Calcutta, Dept of Botany: Asst Lecturer, Lecturer, Reader and Prof. 48–88, Head, Dept of Botany 69–80, INSA Golden Jubilee Prof. 85–90.

Scientific Work: Contributions include the invention of new techniques for the study of physical and chemical nature of chromosomes, adopted in all centres of the world for plant, animal and human systems, the latest technique being orcein-banding for repetitive DNA; establishment of a new concept of speciation in asexual organisms, dynamism of structure and behaviour of chromosomes, in plant, animal and human systems and dynamic DNA; clarification of chemical nature of plant chromosomes through special techniques; developed methodologies for induction of division in adult nuclei through certain metabolic precursors for the study of chromosomes in relation to differentiation; given reorientation to angiosperm taxonomy on the basis of cytological data; successful utilization of embryo irradiation and *in vitro* culture for generating variability. The chemical composition of chromosomes, principally the protein component has been shown to vary during organogenesis, differentiation and reproduction maintaining the basic genetic skeleton.

Important Publications: **(1)** Chromosome *techniques – theory and practice* (1965) Butterworth, London 72, 80. **(2)** *Chromosome techniques. A manual* (1994) Harwood Academic, UK. **(3)** *Plant chromosomes – Analysis, manipulation and engineering* (1999) Harwood Academic. **(4)** *Chromosome painting* (2001) Kluwer Academic, Holland. **(5)** *Plant genome – biodiversity and evolution* (2003–08) Science Publishers, Enfield, UK, 7 Vols.

Memberships: Fellow: TWAS 88; INSA 70; NASI 80; Puerto Rico Acad. of Sci. • President: Indian Sci. Congr. Assoc. 81, INSA 83–84; Indian Bot. Soc.; Indian Soc. of Cell Biology, Indian Soc. of Cytologists & Geneticists • Founder President: FASAS 84–89.

Awards & Distinctions: S S Bhatnagar Award 67 • Jawaharlal Nehru Fellowship 72 • Paul Bruhl Memorial Medal 72 • Birbal Sahni Medal 74 • J C Bose Award 76 • INSA Silver Jubilee Medal 76 • FICCI Award 79 • Padma Bhushan 83 • Meghnad Saha Medal 78 • ISCA Centenary Award 99 • VASVIK Award 2001 • Chief Editor: *Nucleus Intl. J.*

Sharma, Ashutosh

Elected: 1999
Position: Inst. Chair Prof. and Ranjit Singh Chair Prof., IIT Kanpur
Specialization: Soft Nanotechnology and Meso-patterning; Meso-mechanics; Thin Films and Self-Organization; Colloid and Interface Science
Date and Place of Birth: 22 August 1961; Ajmer, Rajasthan
Parents: Deendayal Sharma and Kanti
Spouse and Children: Neeti; One *d*
Address: Department of Chemical Engineering, Indian Institute of Technology,
Kanpur 208 016, India
Tel. (0512) 259 7026 (O), (0512) 259 8504 (R)
email: ashutos@iitk.ac.in; URL: http://www.iitk.ac.in/che/as.htm

Education: IIT Kanpur: BTech 82; Penn State Univ.: MS 84; State Univ. of New York: PhD 87.

Career: State Univ. of New York: Res. Sci. 88–90; IIT Kanpur: Asst Prof. 90–94, Assoc. Prof. 94–97, Prof. 97–, Head Dept of Chem. Engg 2003–.

Scientific Work: Has defined the highly important area of meso-mechanics of soft confined matter and its significant applications in meso-scale patterning of soft materials including polymers, functional interfaces, coatings, detergency, micro/nano fluidics, dry eyes and membrane separations. Studies have aided our fundamental understanding of important phenomena such as nano-mechanics and self-organization in highly confined systems and thin films, soft adhesion, wetting/dewetting and spinodal/nucleation processes. Of the three known mechanisms of the spontaneous instability and dewetting of thin (< 100 nm) films, has pioneered two mechanisms: Heterogeneous instability or 'nucleation' driven by the chemical potential gradients; dewetting driven by the density fluctuations. Has also made very significant theoretical and experimental contributions to the understanding of the third, Cahn's mechanism of spinodal dewetting. Uncovered a universal contact instability of soft elastic solid films, which governs the contact adhesion and detachment, interfacial cavitation, friction and peeling at soft interfaces. Based on the meso-mechanics of interfaces, pioneered several novel self-organizational techniques for large area patterning of thin soft films by controlled dewetting, application of electric fields and by elastic contact instability and recently designed a novel bio-mimic microfluidic super-adhesive.

Important Publications: **(1)** Microfluidic adhesion induced by subsurface microstructures (2007) *Science* **318**, 258–261. **(2)** Biomimetic solutions to sticky problems (2007) *Science* **318**, 203–204. **(3)** Contact Instability in adhesion and debonding of thin elastic films (2006) *Phys. Rev. Lett.* **97**, 018303. **(4)** Templating of thin films induced by dewetting on patterned surfaces (2001) *Phys. Rev. Lett.* **86**, 4536–4539. **(5)** Instability and morphology of thin liquid films on chemically heterogeneous substrates (2000) *Phys. Rev. Lett.* **84**, 931–934.

Memberships: Fellow: INSA 2004; NASI 2006; INAE.

Awards & Distinctions: TWAS Prize 2008 • Ranjit Singh Endowed Chair Prof. IITK 2008 • Distinguished Alumnus Award, IITK 2007 • Institute Chair Prof., IITK 2007 • S S Bhatnagar Prize 2002 • J C Bose National Fellowship 2006 • Friedrich Wilhelm Bessel Research Award 2006 • Padma Vibhushan • M M Sharma Medal • Chemcon Distinguished Speaker Award 2006 • Herdillia Award 2003 • Amar Dye Chem Award 95 • SGSITS Award 93 • Maharashtra National Award 96.

Sharma, Kamal Nath

Elected: 1972
Position: Exec. Dir, M S Ramiah Med. Instruments, Bangalore.
Specialization: Neurophysiology; Behaviour, Biocontrols; Hospital Planning
Date and Place of Birth: 17 November 1929; Mussoorie, Uttar Pradesh
Parents: R M Sharma and Bhuvneshwari Devi
Spouse: Sushil Dua
Address: 503, 6th A Main, 12th Cross, HIG Colony, RMV II Stage, Bangalore 560 094, India
Tel. (080) 2360 6031, (080) 2218 3202 (O), (080) 2341 4004 (R)
email: drsharmakn@yahoo.com

Education: Univ. of Lucknow: MBBS, MD.

Career: Univ. of Lucknow: AIIMS, New Delhi: Univ. of Rochester, USA: Faculty 55–61; Univ. of Illinois, USA: Res. Assoc., Prof. of Physiology & Psychology 62–64; St. John's Med. College, Bangalore, Dept of Physiology: Prof. & Chmn 64–76; Univ. College of Med. Sci., Delhi, Dept of Physiology: Prof. & Head 76, Principal 80; Centre for Brain Res. & Human Development, Delhi Univ.: Dir 88; US Army Food Sci. Lab., USA, Behavioural Res. Dn: Vis. Consultant 67, 70, 72; ICMR, Govt of India, Indo-USSR Plan of Cooperation in Neurophysiology: Chief Coordinator 86.

Scientific Work: Research covers receptor analysis of the alimentary tract and their relation to hypothalmic and limbic structures of the brain involved in food and water intake. Succeeded in demonstrating that central nervous structures modulate visceral receptor control. By applying systems analysis, shown that nutrition dynamics like state of hunger, malnutrition and surfeit conditions, modulate differentially alimentary signalization and may account for variety of responses in different individuals.

Important Publications: **(1)** Role of stomach in regulation of activities of hypothalamic feeding centres (1961) *Am. J. Physiol.* **201**, 593–598. **(2)** Alimentary receptors and food intake regulation (1967) *Chemical Senses and Nutrition* New York, Academic Press, pp. 281–291. **(3)** Receptor mechanisms in the alimentary tract: their excitation and functions (1967) *Handbook of Physiology* Sec. 6, Alimentary Canal. Washington DC, *Am. Physiol. Soc.*, pp. 225–237. **(4)** Taste Vs. Calories: Sensory and metabolic signals in the control of food intake (1969) *Ann. NY Acad. Sci.* **157**, 1084–1125. **(5)** Food intake changes brain sensorimotor neuronal responses to electrical stimulation of the lateral hypothalamus (1995) *Ann. Nat. Acad. Med. Sci.* **31**, 175–185.

Memberships: Fellow: INSA 78; NAMS • President: Biomedical Engg Soc. of India, Section of Physiology of Indian Science Congress; Indian Soc. for Pain Res. & Therapy.

Awards & Distinctions: ICMR Award 62 • Amrut Mody National Res. Award 75 • USSR Acad. of Medical Sci. Anokhin Medal 88 • USSR Acad. of Sci. Sechenov Medal 90.

Sharma, Man Mohan

Elected: 1974
Position: Hon. Kothari Res. Prof., JNCASR, Bangalore; Emeritus Prof. Eminence, ICT, Mumbai
Specialization: Multiphase Reactions/Reactors; Separations
Date and Place of Birth: 1 May 1937; Jodhpur, Rajasthan
Parents: Ramachander and Manghi
Spouse and Children: Sudha; one *s*, one *d* (Vibhu, Prerna)
Address: 2/3, Jaswant Baug, Runwal Park, Behind Akbarallys, V N Purav Marg, Chembur,
Mumbai 400 071, India
Tel. (022) 2529 1539, (022) 2529 6876 (R)
email: mmsharma@bom3.vsnl.net.in

Education: Univ. of Bombay: B. Chem. 58, MSc (Tech.) 60; Univ. of Cambridge, UK: PhD 64.

Career: Bombay Univ., Dept of Chemical Technol.: Lecturer 59–61, Prof. 64– 97, Dir, 89–97; UGC: Natl Lecturer in Engg & Technol. 77–78; Purdue Univ., USA: Shreve Distinguished Vis. Prof. 89.

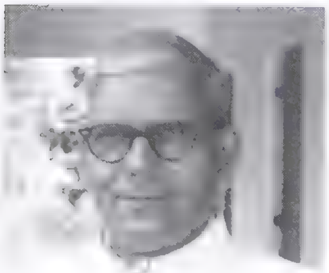
Scientific Work: Work on multiphase reactions/reactors has brought out new strategies which result in intensifying rates of reactions or making reactions more selective. Established links with industrial practice by way of rigorous process design in many areas. Work has made possible separation of close-boiling substances through novel reactions.

Important Publications: **(1)** Effective interfacial area in liquid-liquid extraction (1966) *Chem. Eng. Sci.*, **21**, 707–714. **(2)** Absorption with fast reaction in a slurry containing sparingly soluble fine particles (1969) *Chem. Eng. Sci.*, **24**, 1681–1686. **(3)** Simultaneous absorption of two gases, (1971) *Trans. Inst. Chem. Eng.* UK, 49, 253–280. **(4)** Some aspects of process design of gas-liquid reactors (monograph) (1977) *Trans. Inst. Chem. Eng.* UK, **55**, 710–740. **(5)** Synthesis of triaryl phosphate via phase transfer catalysis (1983) *Synthesis* 558–559, 7.

Memberships: Fellow: Royal Soc. of London 90; Royal Soc. of Chem., London; INSA 76; Institution of Chemical Engineers, UK 78; Maharashtra Acad. of Sci. 79 • TWAS 90 • Intl Fellow: Royal Acad. of Engg. • Foreign Assoc.: US Natl Acad. of Engg • President: INSA.

Awards & Distinctions: S S Bhatnagar Award 73 • K G Naik Gold Medal 74 • Herdillia Award 79 • Vishwakarma Medal 85 • Om Prakash Bhasin Award 85 • UDCT Distinguished Alumnus Award 85 • Indian Chemical Manufacturers Assn First Award 90 • G M Modi Award 91 • Institution of Chemical Engineers, UK Moulton Medal 71, 77 • Padma Bhushan 87 • Meghnad Saha Medal 94 • UDCT Diamond 94 • Durga Prasad Gold Medal • H K Firodia Award 99 • Padma Vibhushan 2001 • Lifetime Awards, CRSI; INAE; ICS • INSA Sci. Medal 2008• SIES, Sri Chandrasekarendra Saraswati Natl Award 2008 • ICT, Mumbai Platinum Award 2009 • DSc (hc), L L D (hc), D Engg (hc).

Sharma, Niranjan Lal*



Elected: 1937
Specialization: Patrology; Economic Geology
Date of Birth: 12 November 1901
Parents: Shyam Lal Sharma and Jamuna Devi
Spouse and Children: Lajshmi Devi; three *s*, one *d*
Last address: Indian School of Mines, Dhanbad, India
***Deceased:** 14 January 1988

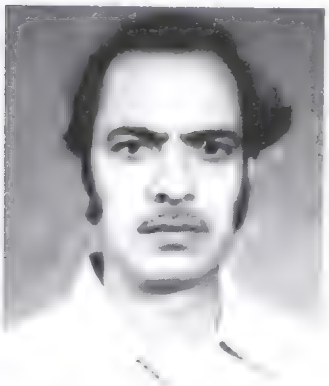
Education: BHU, Varanasi: BSc 22, MSc 24; Univ of Liverpool: MSc 38

Career: BHU Varanasi: Demonstrator 24–27; Indian School of Mines, Dhanbad: Demonstrator, Lecturer in Geology, Prof. and Head of Geology Dept 28–61, Hon. Prof. 61–77.

Scientific Work: Published several original papers on the petrology of different areas: Mt Girner, Danta, Sohawal, Kodarma and Jharia. Compiled articles on many economic minerals of India. Discovered a new variety of quartz mineral in the Jharia coal field named 'Royite' after S K Roy who was at ISM.

Awards and Distinctions: President: ISCA Geol. and Geogr. Sec. 53 • Coggin Brown Mem. Medal 70–71 • Govt of India Natl Mineral Award 71 • ISM Dhanbad: DSc (hc) 87.

Sharma, Ram Prakash



Elected: 1987
Specialization: Organic Chemistry, Natural Products Chemistry ; New Synthetic Methods
Date and Place of Birth: 5 January 1939; Rakran Dhaha, Punjab
Parents: Mast Ram Sharma and Udhan Devi
Spouse and Children: Nirmal Kanta; one *s*, one *d* (Sanjeev, Suchitra)
Address: E-45, DGS Housing Society, Sector 22, Plot No. 6, Dwaraka, New Delhi 110 045, India
Tel. (011) 2509 1470 (R), Mobile: 98114 89286
email: drrp_sharma@yahoo.co.in

Education: Punjab Univ.: BSc 59; Aligarh Muslim Univ.: MSc 62, PhD 66; Univ. of London: PhD 72.

Career: AMU, Aligarh: Res Fellow 63–67; Antibiotics Plant (IDPL), Rishikesh: Res. Asst 67–70; Imperial College, London, Dept of Chem.: Res. Fellow 70–72; Florida State Univ., USA: Res. Assoc. 72–75; NCL, Pune: Pool Offr 76–77; RRL, Jorhat: Sci. 77–91; Central Inst. of Medicinal & Aromatic Plants, Lucknow: Dy Dir 92; CIMAP: Sci. 96–99.

Scientific Work: Isolation and structure elucidation of one hundred new bioactive natural products mainly from the Asteraceae family plants. Established the absolute stereochemistry of some of these by chemical correlation studies and partial synthesis. Development of new synthetic methods (at least twentyfive) using silicon reagents transition metal catalysis and metal-metal salts interaction. R&D work on the antimalarial drug-artemisinin, anticancer drug taxol and the insecticidal compound carbofuran.

Important Publications: **(1)** A new method for deoxygenation of vicinal diols (1982) Tetrahrdron Lett. **23**, 1365–66. **(2)** Cyclodehydrogenation of ortho- (3, 3-dimethylallyl) phenols with trityl tetrafluroborate (1983) Tetrahedron Lett. **24**, 5801–4. **(3)** Reductive removal of allylic functional groups by Nickel boride Tetrahrdron Lett. **26**, 2581–4. **(4)** Reactions of Nitro-alkenes with iodotrimethylsilane: A new method for the conversion of vinyl nitrosteroids to ketosteroids (1990) Chem. Commun. 498. **(5)** Stannous Chloride dehydrate - A mild reagent for the transformation of 6-nitrosteroids to 5-hydroxy-6-ketosteriods. (1990) Chem. Commun. 498.

Awards and Distinctions: CSIR Roll of Honour 87.

Sharma, Ram Swaroop

Elected: 1989
Specialization: Metamorphic Petrology; Mineralogy; Precambrian Geology
Date and Place of Birth: 10 July 1937; Jaipur, Rajasthan
Parents: Bhagwan Sahai Sharma and Chhoti
Spouse and Children: Kanchan; two *s* (Anurag, Prashant)
Address: 70/36, Pratapnagar, Sector 7, Sanganer (RHB), Jaipur 302 033, India
Tel. (0141) 279 0317 (R), Mobile: 94148 88025
email: sharma.r.sw@gmail.com

Education: Rajasthan Univ.: BSc 58: BHU, Varanasi: MSc 60; Univ. of Basel, Switzerland: DPhil 68.

Career: M B College, Rajasthan Univ.: Lecturer 60–61; BHU, Dept of Geology: Lecturer 61–75, Reader 76–87, Prof. 88–99; CSIR Emer. Sci. 99–2004; INSA Sr Sci 2004–07; Mineralogical Inst. Karlsruhe, Germany: Alexander von Humboldt Fellow 76–77, 84–85; Univ. of Leicester, UK, Dept of Geology: Royal Soc. Fellow 82–83; Saugar Univ., Dept of Geology: UGC Vis. Prof. 88; Curtin Univ. of Technol., School of Applied Geology, Australia: Vis. Prof. 91–92.

Scientific Work: Worked on tectono-metamorphic evolution of archaean gneisses and granulites from Rajasthan. Deduced an anticlockwise movement path in P-T space for these rocks from their mineralogy and thermodynamics models of geothermobarometry, which places constraints on the geological evolution of the Aravalli mountain. Proposed petrological criteria to distinguish basement from the cover rocks of this region.

Important Publications: **(1)** On banded gneisses and migmatites from Lavertezzo and Rozzera (Valle Verzasca, Canton Ticino) (1969) *Schweiz. Mineral. Petrogr. Mitt.* **49/2**, 199–276. **(2)** Deformational and crystallization history of the precambrian rocks in north-central Aravalli mountain, Rajasthan, India (1977) *Precamb. Res.* **4**, 133–162. **(3)** Paragenetic relations in gedrite-cordierite-staurolite-biotite-sillimanite-kyanite gneisses at Ajitpura, Rajasthan, India (1981) *Contrib. Mineral. Petrol.* **78**, 49–60. **(4)** Evolution of the central Indian fold belts: a geodynamic model (2007) *Gondwana Res. Mem.* **10**, 42–45. **(5)** Cratons and fold belts of India (2009) Springer-Verlag, Heidelberg, 304 p.

Memberships: Fellow: Swiss Mineralogical Soc. 69; INSA 92.

Sharma, Rameshwar Prasad

Elected: 1990
Position: INSA Sr Sci., IARI, New Delhi
Specialization: Developmental Genetics, Mutagenesis, Molecular Biology ; Biotechnology
Date and Place of Birth: 20 February 1940; Molhna, Roorkee, Uttar Pradesh
Spouse and Children: Siya; one *s*, two *d*
Address: NRC on Plant Biotechnology, Indian Agricultural Research Institute, New Delhi 110 045, India
Tel. (011) 2584 1787, (011) 2718 3975 (R), Mobile: 98106 78220
email: rpsnrcpb@yahoo.co.in

Education: Agra Univ.: BSc 60, MSc 62, PhD 69.

Career: NRC on Plant Biotechnology; IARI, New Delhi: Sci. 72–89, Prof. 89–93, Project Dir 93–2000; Emeritus Sci: 2000–06, INSA Sr Sci. 2006–.

Scientific Work: In the area of developmental and behavioural genetics, a number of novel mutations in *Drosophila melanogaster* have been isolated. In the area of cytogenetics, the heterochromatin in chromosomal aberrations and synergistic interaction with gamma rays and ethyl methanesulphonate in inducing mutations in *Drosophila*, barley and *Aspergillus* has been established. A barley mutant DL-253 has been identified for cultivation in the central zone of India. In the area of molecular biology and biotechnology, use of *Bacillus thuringiensis* based technology for insect-pest management is being made by developing a new Bt based biopesticides, Bt transgenic microbes and Bt transgenic crop plants. Molecular breeding programmes involving construction of molecular maps, character tagging and molecular marker added selections are underway in *Brassica*, rice and chickpea.

Memberships: Fellow: NASI 90; INSA 99; NAAS.

Sharma, Shobhona

Elected: 2003
Position: Prof., TIFR, Mumbai
Specialization: Molecular Parasitology; Parasite Immunology; Parasite Metabolism
Date and Place of Birth: 5 February 1953; Calcutta, West Bengal
Parents: Amarendra Kesari Banerji and Roma
Spouse and Children: Dinesh Kumar Sharma; one *s*, one *d* (Apoorva, Ruchira)
Address: Department of Biological Sciences, Tata Institute of Fundamental Research, Homi Bhabha Road, Mumbai 400 005, India
Tel. (022) 2278 2625 (O), (022) 2280 4745 (R)
email: sharma@tifr.res.in

Education: Delhi Univ.: BSc Hons 73, MSc 75; Bombay Univ.: PhD 81.

Career: TIFR: Postdoc 81–83, Fellow 87–91, Reader 91–97, Assoc. Prof. 97–2002; Prof. 2002–; New York Univ., Med. Center, USA: Res. Assoc. 83–85; Duke Univ., Med. Center, USA: Res. Assoc. 85–87.

Scientific Work: The group has been studying various aspects of the biology of the malarial parasite. (a) Immune response to malaria: Focus has been to dissect the naturally acquired immunity to the parasite. Using a differential immunoscreen identified novel protective proteins of *Plasmodium*. Recently observed distinct age-dependent sexual dimorphism in malaria infections in hypoendemic areas of Mumbai. In mouse models, noted that the development of B and T cells are impaired during malarial infection. (b) Glycolysis and metabonomics: Using NMR on physiologically live cells, studied the glucose utilization by the parasite-infected and uninfected RBCs and noted that a small cohort of parasitized cells can significantly influence the glucose utilization of host cells. (c) Properties of parasite infected red cells: Set up a simple method to assess buckling properties of single erythrocytes with a combination of flow-cell, optical trap and fluorescence microscope.

Important Publications: **(1)** Measuring erythrocyte deformability with fluorescence, fluid forces and optical trapping. (2008) *J. Biomed. Optics* **13**, 064021–7. **(2)** Malaria parasite-infected erythrocytes inhibit glucose utilization in normal red cells (2005) *FEBS Lett.* **579**, 6151–6158. **(3)** Characterization of P0, a ribosomal phosphoprotein of *Plasmodium falciparum*. Antibody against amino-terminal domain inhibits parasite growth (1997) *J. Biol. Chem.* **272**, 12138–12143. **(4)** Novel proteins of *Plasmodium falciparum* identified by differential immunoscreening using immune and patient sera (1994) *Infect. Immun.* **62**, 651–656. **(5)** Diversity of circumsporozoite antigen genes from two different strains of the malarial parasite *Plasmodium knowlesi* (1985) *Science* **229**, 779–782.

Awards & Distinctions: Medal for Excellence in molecular aspects of vector borne diseases; Natl Acad. of Vector Borne Diseases 96 • Pratima and Sucharu Chakrabarty Science Samman 2003 • Wisitex Foundation Award Vigyan Ratna in Science 2004–05.

Sharma, Surinder Mohan

Elected: 2008
Position: Head, High Pressure Phys. Dn; BARC, Mumbai
Specialization: Condensed Matter Physics under High Pressures; Synchrotron Beamlines; Molecular Dynamics First Principles Calculations
Date and Place of Birth: 15 April 1952; Rahon, Punjab
Parents: Vidya Sagar Sharma and Kamla Rani
Spouse and Children: Sarita; one *s*, one *d*
Address: High Pressure Physics Division, Bhabha Atomic Research Centre, Trombay, Mumbai 400 085, India
Tel. (022) 2559 3690 (O), (022) 2556 7483 (R)
email: smsharma@barc.gov.in

Education: Punjab Univ.: BSc Hons 74, MSc Hons 75; BARC: PG Training 76; Bombay Univ.: PhD 83.

Career: BARC: Sci. Offr 76–2006, Head Synchtron Radiation Sec. 2001–06, Outstanding Sci. & Head, High Pressure Phys. Sec. Head 2006–; Washington State Univ.: Vis. Faculty 87–89, Vis. Prof. 96–97.

Scientific Work: Has made several experimental as well as theoretical contributions towards the understanding of phase transformations and stability of materials under high pressure. Studies on the pressure induced amorphization in materials established that it is caused by impeded kinetics driven in many cases by the steric hindrances. Theoretical formulation of the response of ruby R-lines under arbitrary stresses explains all the known experimental results under static and shock stresses. Experimental investigations on the single wall carbon nanotubes as well as on magnetic metals filled multiwall carbon nanotubes have shown the mechanical resilience of these tubes as well as unusual high pressure behaviour of the encapsulated nanowires. Built a X-ray diffraction beamline for high pressure studies at Indus-2 and is also participating in the development of several more beamlines.

Important Publications: **(1)** Decomposition of lanthanum hafnate at high pressure (2008) *Phys. Rev.* **B77**, 214105. **(2)** Pressure-induced structural transformation and the remarkable resilience of single wall carbon nanotube bundles (2001) Phys. Rev. **B63**, 205417. **(3)** Pressure induced amorphization of materials (1996) *Progress in Materials Science*, **40**, 1, 1– *77. Rev. Lett.* **73**, 98–101. **(5)** Theoretical analysis of R-line shifts of ruby subjected to different deformation conditions (1991) *Phys. Rev.* **B43**, 879–893.

Memberships: Fellow: NASI 2005.

Awards & Distinctions: Homi Bhabha Sci. & Tech Award 96 • MRSI Medal 99.

Sharma, Vinod Prakash

Elected: 1998
Position: Meghnad Saha Distinguished Fellow, IIT Delhi
Specialization: Malariology ; Vector Biology and Control
Date and Place of Birth: 6 April 1938; Kailawan Village, Bulandshahr, Uttar Pradesh
Parents: Raghunandan Prasad Sharma and Sharda Devi
Spouse and Children: Manju; one s (Amit)
Address: B9/6476 FF, Vasant Kunj, New Delhi 110 070, India
Tel. (011) 2658 2245 (O), (011) 4606 3722 (R), Mobile: 98107 06411
email: vinodpsharma@hotmail.com, vinodsharma1938@gmail.com

Education: Agra Univ.: BSc; Allahabad Univ.: MSc 60, DPhil 64, DSc 79;

Career: Univ. of Udaipur: Jr Lecturer 65, Univ. of Notre Dam: Postdoc 65–67, Purdue Univ.: USA Postdoc Res. Asst 67–69; Forest Res. Inst., Dehradun: Pool Offr 69–70, WHO/ICMR Genetic Control of Mosquitoes Unit, New Delhi: Sr Sci. 70–75; Malaria Res. Centre Vector Control Res. Centre, New Delhi: Dy Dir 75–82; Natl Inst. of Malaria Res. Centre NIMR, New Delhi (formerly MRC): Dir 82–98, ICMR: Additional DG 98, Emeritus Med. Sci. 98–99, WHO, SEARO: STC/STP 98–2001; CRDT, IIT Delhi: Meghnad Saha Distinguished Fellow: 2005–10.

Scientific Work: The institute NIMR had phenomenal growth tackling malaria and testing new technologies in country-wide malaria ecotypes. Institute's contributions in basic and applied research were acclaimed internationally. Introduced innovations in malaria control and successfully demonstrated integration with the primary health care system. Has helped endemic countries in fighting malaria and obtaining GFATM grants.

Important Publications: **(1)** Battling the malaria iceberg with chloroquine in India. (2007) *Malaria J.* **6**, 105. **(2)** Current scenario of malaria in India. (1999) *Parasitologia* **41**, 349–353. **(3)** Community-based malaria control in India. (1987) *Parasitology Today* **3**, 7, 222–226. **(4)** Incorporation of tritiated thymidine in male and female mosquitoes, *Culex pipens* with particular reference to spermatogenesis (1970) *J. Insect Physiol.* **16**, 429–436. **(5)** *Indian Anophelines* (1994) Oxford Press, 56 Janpath, New Delhi.

Memberships: Fellow: NASI 78; INSA 83; Royal Asiatic Soc.; NAM; TWAS 2005; Entomol. Soc. of India.

Awards & Distinctions: Inventions Award 71 • Om Prakash Bhasin Award 85 • R V Rajam Oration Award 87 • M L Gupta Trust Award 89 • WHO Darling Foundation Prize 99 • Padma Shree 92 • ICMR MOT Iyengar Award 90 • Ranbaxy Award 90 • B N Singh Oration Award 90 • Best Scientist Award 95 • B K Srivastava Oration Award 97 • FICCI Cash Award 98 • ICMR B R Ambedkar Centenary Award 2000 • VASVIK Award 2001 • CSE Green Scientist Award 2001 • Award of Honour 2002 • G P Chatterjee Memorial Award 2003–04.

Sharma, Yagya Dutta

Elected: 2000
Position: Prof., Head, AIIMS, New Delhi
Specialization: Molecular Biology; Molecular Malariology ; Protein Chemistry
Date and Place of Birth: 22 July 1951; Aligarh, Uttar Pradesh
Parents: Ram Swaroop Sharma and Maha Devi
Spouse and Children: Saroj; one *d* (Jagruti)
Address: Department of Biotechnology, All India Institute of Medical Sciences,
Ansari Nagar, New Delhi 110 029, India
Tel. (011) 2658 8145 (O), (011) 2658 9654 (R)
email: ydsharma_aiims@yahoo.com

Education: Agra Univ.: BSc 73, MSc 75; Rohilkhand Univ., Bareilly: PhD 78.

Career: AIIMS: Res. Fellow Assoc. 78–82; Assoc. Prof. 87–91, Addl Prof. 91–98, Prof. 98–; Head, Biotechnol. Dept 98–; Univ. of Connecticut, USA: Postdoc Fellow 82–84; Public Health Res. Inst., USA: Res. Assoc. 84–86; Malaria Res. Centre: Pool Offr 86–87.

Scientific Work: Has been able to isolate and characterize large number of molecules from two of the most common human malarial parasites *Plasmodium falciparum* and *P. vivax*. Of these parasite molecules, knob-associated histidine-rich protein (KAHRP also known as PfHRPI) of *P. falciparum* and tryptophan-rich antigens of *P. vivax* (PvTRAgs) are important from the viewpoint of developing therapeutic agents to control malaria. Also contributed significantly to the field of molecular epidemiology of drug resistant malaria.

Important Publications: **(1)** Emergence of an unusual sulfadoxine–pyrimethamine resistance pattern and a novel K540N mutation in dihydropteroate synthetase among post-tsunami *Plasmodium falciparum* population from Indian Island of Car Nicobar (2009) *J. Infect. Dis.* **199**, 1064–1073. **(2)** Immunological responses to a 39.8 kDa *Plasmodium vivax* tryptophan-rich antigen (PvTRAg 39.8) among humans (2008) *Microbes Infection* **10**, 1097–1105. **(3)** Expression, purification and characterization of the immunological response to a 40 kDa *Plasmodium vivax* tryptophan-rich antigen (PvTRAg40) (2008) *Infect. Immun.* **76**, 2576–86. **(4)** Similar trends of pyrimethamine resistance-associated mutations in *Plasmodium vivax and P. falciparum* (2007) *Antimicrob. Agents Chemother.* **51**, 3, 857–63. **(5)** Knob-associated histidine-rich protein gene (1987) *Nature* **326**, 550.

Memberships: Fellow: NASI 93; INSA 2006; Indian Soc. for Malaria & other Communicable Diseases.

Awards & Distinctions: S S Bhatnagar Prize 94 • M O T Iyengar Prize 95.

Sharma, Yogendra

Elected: 2008
Position: Sci., CCMB, Hyderabad
Specialization: Biophysics; Biochemistry ; Protein Structure and Function
Date and Place of Birth: 2 January 1959; Amarpur, Bulandshahar, Uttar Pradesh
Parents: Pooran Mal Sharma and Sarwati
Children: one *d*
Address: Centre for Cellular & Molecular Biology, Uppal Road, Hyderabad 500 007, India
Tel. (040) 2719 2544 (O), (040) 2715 1457 (R), Mobile: 99086 30358
email: yogendra@ccmb.res.in

Education: Meerut Univ.: BSc 78; MSc 80, SINP, Kolkata: Post MSc 81, PhD 91.

Career: SINP, Kolkata: Res Fellow 82–87; CCMB: Sci. 88–; Washington Univ. School.: Res. Assoc. 95–98;

Scientific Work: Demonstrated that the lens proteins beta gamma-crystallins act as depots of calcium by binding the cation. Until this discovery, crystallins were thought of simply as structural components of the lens, with no particular function. Worked on proteins of the EF-hand superfamily, such as calmodulin and neuronal calcium sensor-1 (NCS-1), and caldendrin. Has shown how E and F helices play a role in defining calcium affinities. Has shown that lithium binds to NCS-1 and decreases the NCS-1 induced InsP3R activity, suggesting the implications of this pathway in bipolar and schizophrenia. Shown that myristoylation, a fatty acid modification, modulates calcium-binding, influences high cooperativity, and reduces protein stiffening thus playing a role in modulating NCS-1 structure and conformation. Has also analysed the structural and regulatory EF-hand motifs in NCS-1.

Important Publications: **(1)** Regulatory and structural EF-hand motifs of neuronal calcium sensor-1: Mg_{2+} modulates Ca^{2+}-binding, Ca^{2+}-induced conformation and equilibrium unfolding transitions (2008) *J. Mol. Biol.* **376**, 1100–1115. **(2)** Ubiquitous lens alpha-, beta- and gamma-crystallins accumulate in anuran cornea as corneal crystallins. (2007) *J. Biol. Chem.* **282**, 18953–18959. **(3)** Equilibrium unfolding of neuronal calcium sensor-1: N-terminal myristoylation influences unfolding and reduces the protein stiffening in the presence of calcium (2005) *J. Biol. Chem.* **280**, 15569–15578. **(4)** Calcium-binding crystallins from *Yersinia pestis*: Characterization of two single beta gamma-crystallin domains of a putative exported protein (2005) *J. Biol. Chem.* **280**, 1209–1216. **(5)** Calcium-binding properties of gamma-crystallin: calcium ion binds at the Greek key beta gamma-crystallin fold (2001) *J. Biol. Chem.* **276**, 38464–38471.

Awards & Distinctions: CSIR Young Scientist Award 2008 • M Sreenivasaya Memorial Award.

Shashidhar, Ranganathan

Elected: 1988
Position: Corp. Dir, Geo-Centers Inc., USA
Specialization: Liquid Crystals and Display Devices; Molecular and Organic Electronics; Nanoelectronics; Nanomaterials
Date and Place of Birth: 1 January 1946; Mysore, Karnataka
Parents: A Ranganathan and V Seethalakshmi
Spouse and Children: B R Ratna; one *d*
Address: Geo-Centers Inc., Ballston Station, Suite 200, 4301, N Fairfax Drive, Arlington, VA 22203, USA
Tel. (+1-703) 772 4371 (O), (+1-703) 897 5034 (R)
email: rshashidhar@geo-centers.com

Education: Univ. of Mysore: BSc 64, MSc 66, PhD 71.

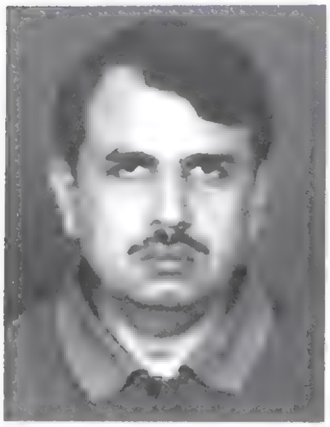
Career: Univ. of Mysore, Dept of Phys. UGC Res. Fellow 66–69, CSIR Res. Fellow 69–71, Lecturer 71; RRI, Bangalore, Liquid Crystals Lab.: Sci./Assoc. Prof. 71–88; Ruhr Univ. of Bochum, Germany: Dept of Physical Chem.: Vis. Prof. 80–82; Georgetown Univ., Dept of Chem.: Prof. 88; Geo-Centers Inc., USA: Sr Sci. 88–93; Naval Res. Lab., USA, Center for Bio/Molecular Sc. & Engg: Programme Manager & Head, Lab. for Molecular Engg Materials & Surfaces 93–2004; Geo–Centers Inc, Washington, USA: Dir of Res. 2004–.

Scientific Work: Important contributions are discovery of the phenomena of pressure-induced mesomorphism, first observation of triple points in liquid crystals, fundamental understanding of the phase diagrams of reentrant systems, first observations of a gas-liquid like critical point and a mean-field to tricritical cross-over phenomenon. Of late has been interested in developing polymer-based materials. This led to development of ultra-fast switching polymers, new technique for alignment and novel pyroelectric materials. Developed a new method for quantitative study of interfacial order of buried interfaces in thin organic films and the first quantitative study of surface-induced roughness of liquid crystals. Work in self-assembly involves understanding the mechanism of formation of microstructures and development of unique materials from self-assembling structures.

Memberships: Member: American Physical Soc.; Materials Res. Soc.; Soc. for Optical Engineers; Soc. for Information Displays; American Liquid Crystal Soc.; Assn for Intl High Pressure Research.

Awards & Distinctions: S S Bhatnagar Prize 84 • Navy Outstanding Performance Award 93 • Alan Berrman Award for Outstanding Paper in Basic Sci. 93.

Shashidhara, Lingadahalli Subrahmanya



Elected: 2007
Position: Prof., Coordinator, IISER, Pune
Specialization: Developmental Biology; Evolution ; Genetics
Date and Place of Birth: 23 March 1963; Lingadahalli, Chickmagalur, Karnataka
Parents: L V Subrahmanya and M R Savithri
Spouse and Children: M C Lakshmi; one *d* (Sneha)
Address: Indian Institute of Science Education and Research (IISER),
900, NCL Innovation Park, Dr. Homi Bhabha Road, Pune 411 008, India
Tel. (020) 2590 8001 (O), (020) 2588 3086 (R), Mobile: 94220 04328
email: ls.shashidhara@iiserpune.ac.in; URL: http://www.iiserpune.ac.in

Education: Univ. of Agri. Sci., Dharwad: BSc 85, MSc 87; Univ. of Cambridge, UK: PhD 91.

Career: University of Agri. Sci.: Teaching Assoc. 87–88; Univ. of Cambridge, UK: PDF 91–93; NCBS, Bangalore: Vis. Fellow 93–95; CCMB: Sci. 95–2007, Project Leader 95–2003, Group Leader 2003–07; IISER, Pune: Prof. and Co-ordinator 2007–.

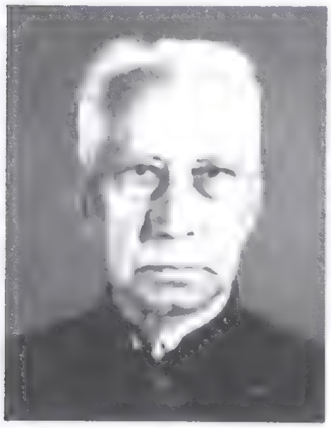
Scientific Work: Research focusses on understanding the mechanism by which the Hox genes function in fruit-fly *Drosophila* to specify positioning of limbs and brings out differences between forelimb and hindlimb during development. This work is important for general understanding of the mechanism by which various cells/ tissues/organs are positioned in their respective places in our body and how shape and size of different cells/ organs are determined. Work suggests that variation in appendage forms is generated during evolution when certain key signalling pathways such as Wnt, TGF-β and EGFR/Ras pathways come under the influence of Hox genes. Also pioneered the development of techniques to use *Drosophila* as a model system to study human genes, diseases and in drug discovery programs.

Important Publications: **(1)** Human APC sequesters β-catenin even in the absence of GSK-3β in a *Drosophila model* (2008) *Oncogene* **27**, 2488–2493. **(2)** Modulation of decapentaplegic gradient during haltere specification in *Drosophila* (2007) *Dev. Biol.* **302**, 243–255. **(3)** Signalling interactions between squamous and columnar epithelia of *Drosophila* wing disc (2005) *J. Cell Sci.* **118**, 3363–3370. **(4)** A critical role for cyclin E in cell fate determination in the central nervous system of *Drosophila* (2005) *Nat. Cell Biol.* **7**, 56–62. **(5)** Drosophila twins regulates Armadillo levels in response to Wg/Wnt signal. (2004) *Development* **131**, 1007–1016.

Memberships: Fellow: INSA 2007; NASI 2008.

Awards & Distinctions: S S Bhatnagar Award 2008 • DAE–SRC Outstanding Research Investigator Award 2005 • CSIR Technology Award 2003.

Shastri, Nilkanth Abaji*



Elected: 1942
Specialization: Laplace Transforms; Mathematical Analysis
Date and Place of Birth: 1 June 1904; Nandgaon Khandeshwar, Amaravati, Maharastra
Parents: Abaji Vishnu Shastri and Lakshmi
Spouse and Children: Nalini; two *s*, one *d*
Last Address: Khare Town, Dharampeth, Nagpur 440 010, India
***Deceased:** 2 January 1995

Education: Nagpur Univ.: BSc 25, MSc 27; London Univ., UK: MSc 29.

Career: Union Govt of Central Provinces & Berar: Asst Prof. of Maths 29–56; Inst. of Sc., Nagpur: Prof of Maths 56–59; M M College of Sc., Nagpur: Principal 59–64; Nagpur Univ., Postgraduate Dept of Maths: UGC Prof. 65–70; King Edward Soc. Foreign Scholarship 27.

Scientific Work: Used theorems of Laplace transforms and operational calculus and also methods of contour integration to obtain properties like addition theorems, recurrence formulae, integral representations and integral functions of mathematical physics like confluent hyper-geometric function, Bessel function, Bateman's *K* function Angelesens and Laguerre polynomials, etc. Used simultaneous operation calculus to obtain result given by Hardy and Newman's series. Used the operational representation (OR) in which the image consists of product of two functions of which one part is a form of original of second OR and by taking different values of the function of 2nd part of the product to obtain various theorems.

Shastry, Balajapalli Sriram

Elected: 1988
Position: Prof. of Physics, Univ. of California, USA
Specialization: Many Body Physics; Correlated Fermi Systems; Statistical Mechanics and Integrable Systems
Date and Place of Birth: 26 November 1950; Akola, Maharashtra
Parents: B S K Shastry and Duruvasula Malathi Devi
Spouse and Children: Vasundhara; two s (Krishna Chaitanya, Anirudh Janardan)
Address: Department of Physics, University of California, Santa Cruz, CA 95064, USA
Tel. (+1-831) 459 5849 (O), (+1-831) 426 6248 (R)
email: sriram@physics.ucsc.edu, sriram.shastry@gmail.com
URL: //physics.ucsc.edu/~sriram/sriram.html

Education: Nagpur Univ.: BSc 68; IIT Madras: MSc 70; Univ. of Bombay: PhD 76.

Career: Central Univ. of Hyderabad, Hyderabad: Lecturer 77–80; Dept of Maths, UK, Imperial College: Royal Soc. Bursar 79–80; Univ. of Utah, USA, Dept of Phys.: Instructor 80–81, Asst. Prof. (Res.) 81–82; TIFR, Bombay, Theoretical Phys Group: Fellow 82–86, Reader 86–89; Princeton Univ., USA, Phys. Dept: Vis. Lecturer 87–89; A T & T Bell Labs, USA: Member Tech. Staff 88–94; IISc, Bangalore: Prof. of Phys. 94–2003; Univ. of Calif, USA: Prof. 2003–.

Scientific Work: Contributions include the exact high-density expansion of susceptibility of the electron gas to order r^2_s; the first proposal for Monte-Carlo simulation for fermions on a lattice in 1-d; a quantitative theory of the neutron scattering from paramagnetic iron; a new exactly solvable model of quantum (S=1/2) anti ferromagnetism in 2-d; and the exact solution of the many component nonlinear Schrödinger eigenvalue problem and related nonlinear Dirac equation in 1-d. Work has been the discovery of new exactly integrable model in 2-d statistical mechanics and proof of integrability of 1-d Hubbard model.

Important Publications: **(1)** Zero point entropy in spin ice – $Dy_2Ti_2O_7$ (1999) *Nature* **399**, L 333. **(2)** Theory of Raman scattering in Mott–Hubbard systems (1990) *Phys. Rev. Lett.* **65**, 1068. **(3)** The t-J model and nuclear magnetic relaxation in high T_c materials (1989) *Phys. Rev. Lett.* **63** 1288. **(4)** Exact solution of an s = 1/2 Heisenberg antiferromagnetic chain with long ranged interactions (1988) *Phys. Rev. Lett.* **60**, 639. **(5)** Exact ground state of a quantum-mechanical antiferromagnet, Low Temp. Conf. 16 (1981) *Physica* **108B**, 1069.

Memberships: Fellow: INSA 99; NASI 2002; TWAS 2000.

Awards & Distinctions: TWAS Basic Sciences Award for Physics 99 • American Physical Society's Lars Onsager Prize for Statistical Mechanics 2009.

Shastry, Sishta Venkata Seetharama

Elected: 1975
Specialization: Cytogenetics; Taxonomy; Plant Breeding ; Rice Development
Date and Place of Birth: 4 November 1928; Guntur, Andhra Pradesh
Parents: Anjaneya Shastry and Raghavamma
Spouse and Children: Leela; one *s*, two *d*
Address: Ashoka, 202, Gautami Apartments, Barkatpura, Hyderabad 500 027, India
Tel. (040) 2755 1666 (R)

Education: Andhra Univ.: BSc 50; Univ. of Wisconsin, USA: MS 57, PhD 58.

Career: CRRI, Cuttack: Res. Asst 50–55; Univ. of Wisconsin, USA: Res. Asst 58; IARI, New Delhi: Asst Prof. 59–61, Botanist 61–66; All India Co-ordinated Rice Improvement Project, Hyderabad, ICAR: Project Co-ordinator 69–77; Intl Inst. of Tropical Agri, Nigeria: Dir of Res. 77–83; Intl Rice Commission, FAO, Rome: Executive Secretary 75–77.

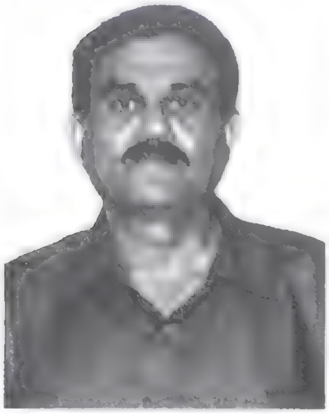
Scientific Work: Made cytogenetic and taxonomic study of the genus *Oryza*. Investigated the role of chromosome structural differentiation in speciation. Developed high-yielding varieties of rice with resistance to insects and diseases. Played a significant role in the development of rice varieties such as 1003 Jaya and 1003 Phalguna. Articulated agrotechniques that promote high rice yields and improved management of fertilizers. Studied genetics of resistance to rice insects and diseases.

Important Publications: **(1)** Pachytene analysis in *Oryza*: Sterility in Japonica indica hybrids, *Chromosoma*, **12** (20) 248–271. **(2)** Pachytene analysis in an intersectional hybrid, *O. sativa* XO officinales, *The Nucleus*, **4**, 67–80. **(3)** Timing imbalance in meiosis of the F1 hybrid *Oryza sativa* XO australiensis, *Gen. Res.* UK, **2**, 3, 373–383. **(4)** Genetic improvement vs crop husbandry in rice. *Biosafety of transgenic rice*. NAASc, New Delhi. **(5)** Rice breeding in retrospect, (2006) *Curr. Sci.*, **91**, 12.

Member: Fellow: INSA 84.

Awards & Distinctions: Borlaug Award 73 • Jannareddy Venkata Reddy Medal 75 • Ramiah Centenary Medal 92 • Padma Shri 71.

Shenoi, Sadananda Satheesh Chandra



Elected: 2007
Position: Dir, INCOIS, Hyderabad
Specialization: Physical Oceanography; Ocean-Atmosphere Interaction; Satellite Oceanography
Date and Place of Birth: 30 May 1958; Thuravoor, Kerala
Parents: J Sadananda Shenoi and R Rohini
Spouse and Children: Geetha; one *s*, one *d*
Address: Indian National Centre for Information Services (INCOIS), Ocean Valley, P.B. No 21,
IDA Jeedimetla Post, Hyderabad 500 055
Tel. (040) 2389 5000 (O) (040) 2389 4647 (R)
EmailL shenoi@incois.gov.in

Education: Univ. of Kerala: BSc 78; CUSAT: MSc 80, PhD 84.

Career: Cochin Univ. of Sci. & Tech: JRF 81–82; Natl., Inst. of Oceanography, Goa: Trainee Sci. 82–83, Sci. 83–2009; Sci.; Univ. of Miami, Postdoc Fellow 93–95; INCOIS, Hyderabad: Dir 2009–.

Scientific Work: Contributed significantly to the understanding of physical oceanography of the waters around India during the last two decades. The work particularly stands out in three areas: Study of processes internal to the ocean that influence SST and hence the coupling between the ocean and monsoon; development and validation of SST retrieval algorithms using satellite data, description of the circulation and water masses in the Indian Ocean. The first one was a consequence of the recent Arabian Sea monsoon experiment. This changed the traditional view that the ocean plays only a passive role in monsoonal process: the ocean plays an active role in the coupling between the north Indian Ocean and monsoon. The second one resulted from the sustained effort to make remotely sensed SST over the Indian Ocean more reliable. It has been shown that the regional optimization of the coefficients of algorithms alone can improve the SST retrievals by 50% and further improvements are possible through the use of nonlinear sea surface temperature algorithm. The third was the contributions toward the development of a new framework for understanding the circulation in the North Indian Ocean. The hydrographic observations carried out in the seas around India and direct measurements of currents have contributed significantly to the understanding of the variability of currents and water masses in the Indian Ocean.

Important Publications: **(1)** On the accuracy of the simple ocean data assimilation analysis for estimating heat budgets of the near-surface Arabian Sea and Bay of Bengal (2005) *J. Phys. Oceanogr.* **35**, 395–400. **(2)** Remote forcing annihilates barrier layer in southeastern Arabian Sea (2004) *Geophys. Res. Lett.* **31**, L005307. **(3)** Differences in heat budgets of the near-surface Arabian Sea and Bay of Bengal: Implications for the summer monsoon (2002) *J. Geophys. Res.* **107**, C6, 10.1029/2000JC000679. **(4)** On the sea surface temperature high in the Lakshadweep Sea before the onset of the southwest monsoon. (1999) *J. Geophysical Res.* **104**, 15703–15712. **(5)** Near-surface circulation and kinetic energy in the tropical Indian Ocean derived from Lagrangian drifters (1999) *J. Marine Res.* **57**, 885–907.

Memberships: Ocean Soc. of India, Kochi; Goa Vigyan Parishad.

Shenoy, Subodh Raghunath

Elected: 1992
Position: Prof., Univ. of Hyderabad
Specialization: Condensed Matter Physics; Statistical Physics
Date and Place of Birth: 16 October 1947; Bombay
Parents: Bellikoth Raghunath Shenoy and Anasuya
Spouse and Children: Meera; one *d* (Suchitra)
Address: School of Physics, University of Hyderabad, Hyderabad 500 046, India
Tel. (040) 2313 4306 (O), (040) 2331 5420 (R), Mobile: 99491 98515
email: subodhrshenoy@gmail.com, srssp@uohyd.ernet.in, shenoy@ictp.it

Education: Univ. of London, UK: BSc Hons 68; Yale Univ., USA: MPhil 70, PhD 73.

Career: Univ. of South Florida: Asst Prof. 73–74; TIFR, Bombay: Vis. Member 74–75; Inst. of Physics, Bhubaneswar: Lecturer 75–77; Univ. of Hyderabad, Hyderabad: Lecturer 77–78, Reader 78–86, Prof. 86–94; Intl Centre for Theoretical Physics, Trieste: UNESCO Staff Member 94–2005; Univ. of Hyderabad: Vis. Prof. 2005–.

Scientific Work: Showed that a magnetic field could enhance, and change the effective dimensionality of the fluctuation specific heat of Type II superconductors; suggested a total-current-conserving dynamics for Josephson junction arrays; verified a 'hysteresis window' for tilted-double-well jumps, with control-parameter sweep rates competing against metastable decay rates; generalized the Kosterlitz–Thouless 2D XY model vortex-point unbinding to 3D XY model vortex loops, enabling critical exponents to be extracted, with application to layered superconductors; proposed a quantum paraelectric mechanism for buckled-plane, layered high-T_c superconductors; obtained Josephson tunneling equations for Bose–Einstein conensate in a double well, with novel macroscopic quantum self-trapping; developed a strain-tensor (rather than displacement-vector) approach to nanoscale elasticity, with compatibility constraints inducing powerlaw anisotropic interactions, yielding elastic domain-wall texturing, in complex functional materials.

Important Publications: **(1)** Effective dimensionality change of fluctuations in superconductors in a magnetic field (1972) *Phys. Rev. Lett.* **23**, 1025. **(2)** Dynamic conductivity of a 2D Josephson junction array (1985) *J. Phys.* C, **18**, 5163. **(3)** Kosterlitz–Thouless signatures from 3D vortex loops in layered superconductors (1994) *Phys. Rev. Lett.* **72**, 400. **(4)** Quantum paraelectric model for high-T_c superconductors (1997) *Phys. Rev. Lett.* **79**, 4657. **(5)** Quantum coherent atomic tunnelling between two trapped Bose–Einstein condensates (1997) *Phys. Rev. Lett.* **79**, 4950. **(6)** Ferroelastic dynamics and strain compatibility (2003) *Phys. Rev.* **B67**, 024114.

Awards & Distinctions: S S Bhatnagar Prize 92.

Sheth, Anil Ramanbhai*

Elected: 1988
Specialization: Reproductive Endocrinology; Biochemistry; Fertility Control
Date and Place of Birth: 5 August 1933; Ahmedabad, Gujarat
Parents: Ramanbhai Chandulal Sheth and Kantaben
Spouse and Children: Nandini; one *d*
Last Address: Fulchand Nivas, First Floor, Chowpatty, Bombay 400 007, India
*__Deceased:__ 13 March 1994

Education: Univ. of Bombay: MSc 57, PhD 62.

Career: Indian Cancer Res. Centre, Reproductive Physiology Unit: Sr Res Asst 60–63, Asst Res. Offr 63–66, Res. Offr 66–68, Sr Res. Offr 68–73; ICMR Inst. for Res. in Reproduction: Asst Dir 73–78, Dy Dir 78–84, Dir Grade Sci. 84–92, Dir 92–93.

Scientific Work: Some of the novel findings have been the presence of extremely high amounts of prolactin in semen, autosuppression of the secretion of hypophyseal FSH, the presence of FSH and LH in the prostate – an ectopic site not known before and having a possible role in the autocrine and paracrine regulation of prostatic function, the presence of protein hormone receptors in the cytosolic fractions, etc. Major contribution was in the field of Inhibin research in which the group was the first to report the biochemical structure of inhibin isolated from human semen. Its origin was traced to the prostate and found to be similar to a sperm-coating protein reported later. Isolated and characterized pituitary hormones to make reagents availabe for assaying human reproductive hormones both for diagnosing reproductive disorders as well as evaluating new contraceptives being tested in India.

Memberships: Fellow: Natl Acad. of Med. Sci.; Maharashtra Acad. of Sci.; Gujarat Acad. of Sci. • President: Endocrine Soc. of India.

Awards & Distinctions: Basanti Devi Amirchand Award 87.

Sheth, Shantilal Chhaganlal*

Elected: 1965
Specialization: Nutrition; Liver Diseases; Tropical and Infectious Diseases; Paediatrical Problems
Date and Place of Birth: 29 October 1912; Palitana, Gujarat
Parents: Chhaganlal Narandas and Nandiniben
Spouse and Children: Hiralaxmi; one *s*, one *d*
Last Address: Roxana, 109, M Karve Road, Bombay 400 020, India
***Deceased:** 25 January 1990

Education: Univ. of Bombay: MBBS 37, MD 48; Univ. of London: DCH 47, MRCP 48.

Career: Topiwala Natl Med. College, Bombay: Prof. and Head of Pediatrics and Dir 48–70, Hon. Dir, Prof. 70–75; Univ. of Bombay: Dean Faculty of Medicine 56–58.

Scientific Work: Main subject of studies were childhood cirrhosis, diarrhoeal diseases in children, malnutrition, infantile and neonatal tetanus and epidemiological studies in diphtheria and childhood tuberculosis. Basic topics like nutrition, liver diseases and tropical and communicable diseases, conceptual themes on preventive and social paediatrics, clinical evaluation of drugs, epidemiological studies in childhood disorders and general topics like the part to be played by the profession in maternal and child health (MCH), are some of the areas in which substantial contributions have been made.

Memberships: Fellow: College of Physicians and Surgeons; Royal College of Physicians; Indian Acad. of Paediatrics • President: College of Physicians & Surgeons; Indian Paediatric Soc. 56; Assn of Pediatricians of India 61; Indian Med. Assn 65–66; Med. Council of India 69–75; Bombay Medical Congress 73; Am. Coll. of Chest Physicians.

Awards & Distinctions: Padma Bhushan 72 • Hon. Physician to President of India 73.

Shetty, Hunthrike Shekar

Elected: 1998
Position: Emertius Prof., Univ of Mysore
Specialization: Seed Biology; Seed Pathology and Technology; Molecular Plant Pathology ; Biotechnological Approach to Plant Disease Management
Date and Place of Birth: 5 November 1944; Rattady, Karnataka
Parents: H Soorappa Shetty and H Akkamma
Spouse and Children: Kusuma S Shetty; one *s*, one *d*, (Pushparaj, Nandini)
Address: Department of Studies in Applied Botany and Biotechnology,
University of Mysore, Manasagangotri, Mysore 570 006, India
Tel. (0821) 251 5126 (O), (0821) 251 5127 (R), Mobile: 94498 37566
email: hss_uom@hotmail.com, hss@appbot.uni-mysore.ac.in

Education: Univ. of Mysore, BSc 67, MSc 69, PG Dip in German Language 72, PhD 74; Danish Govt Inst. of Seed Pathology, PG Dip in Seed Pathology 78.

Career: JSS College, Nanjangud: Lecturer 69–70; Univ. of Mysore: Res. Offr 70–84, Reader & Chmn 84–87, Prof. & Chmn 97–2004, Offr-in charge/Principal Investigator, ICAR-AICPMIP Project, Mysore Centre 2004–.

Scientific Work: Biology and epidemiology of oomycetes pathogen *Sclerospora graminicola* in pearl millet system, molecular events during infection process, R and Avr gene isolation and characterization and their utilization in molecular breeding in developing downy mildew resistant hybrids.

Important Publications: **(1)** Serodiagnosis of pearl millet resistance to downy mildew by quantitating cell wall P/HRPG using polyclonal antiserum PabP/HRGP (2008) *Euro. J. Plant Pathol.*, **121**, 77–85. **(2)** Role of hydroxyproline-rich glycoprotein in resistance of pearl millet against downy mildew pathogen *Sclerospora graminicola* (2007) *Planta* **226**, 313–333. **(3)** Purification and characterization of praline/hydroxyproline-rich glycoprotein from pearl millet coleoptiles infected with downy mildew pathogen *Sclerospora graminicola* (2007) *Phytochemistry* **68**, 298–305. **(4)** Elicitation of defense related enzymes and resistance by L methionine in pearl millet against downy mildew disease caused by *Sclerospora graminicola* (2005) *Plant Physiol. Biochem.* **43**, 808–815. **(5)** Accumulation of hydroxyproline rich glycoproteins in pearl millet seedlings in response to *Sclerospora graminicola* infection (2004) *Plant Sci.* **167**; 1227–1234.

Memberships: Fellow: NAAS 98; NASI 2002 • Nominated Member: Seed Pathology Committee of Intl Soc. of Plant Pathology, USA 96; American Phytopathological Soc., USA • Member: New York Acad. of Sci.; Intl Seed Testing Assn, Plant Disease Committee, Zurich • Life Member and Fellow: Indian Botanical Soc.; Indian Pathological Soc.; Indian Soc. of Seed Sci. and Tech. • Life Member: Soc. for Plant Biochemistry and Biotechnology; Indian Sci. Congress Assn • Asian Agri-history Foundation; Assn of Food Scientists and Technologists.

Awards & Distinctions: Certificate of Appreciation, United States Dept of Agri. 96 • Mysore Univ. Golden Jubilee Award for Sci. and Tech. 96 • Om Prakash Bhasin Award 98 • Chaudhary Devi Lal best coordinated research project Award, ICAR 2004 • Intl Seed Health Award, Danish Seed Health Center 2006.

Shetye, Satish Ramnath

Elected: 1992
Position: Dir, NIO, Goa
Specialization: Physical Oceanography
Date and Place of Birth: 25 October 1950; Panaji, Goa
Parents: Ramnath V Shetye and Vijayabai
Spouse and Children: Durga; one *s*, one *d* (Vineet, Veena)
Address: National Institute of Oceanography, Dona Paula 403 004, India
Tel. (0832) 245 0201 (O), (0832) 246 1660 (R), Mobile: 94224 43424
email: shetye@nio.org

Education: Univ. of Bombay: BSc Hons 71: IIT Bombay: MSc 73; Temple Univ. USA: MA 76; Univ. of Washington, USA: MSc 78, PhD 82.

Career: Univ. of Washington, USA: Res./Teaching Asst 1975–82; NIO, Goa: Res. Assoc. 82–84, Sci. 84–2004, Dir 2004–.

Scientific Work: Group has worked on virtually all aspects of physical oceanography of the waters around India: ship-based observations to study coastal currents; theoretical and model studies to establish a link between these currents and the circulation of the entire North Indian Ocean; variability of sea level along the coast; tides, storm surges, and tsunamis; dynamics of estuaries; hydrology of rivers that feed the estuaries; and, the field of sea surface temperature in the North Indian Ocean and its link to the summer monsoon.

Important Publications: **(1)** Observational evidence for remote forcing of the West India coastal current (2008) *J. Geophys. Res.* **113**, C11001. **(2)** On the dynamics of the Lakshadweep high and low in the southeastern Arabian Sea (1997) *J. Geophys. Res. – Oceans* **102**, C6, 12,551–12,562. **(3)** Hydrography and circulation in the western Bay of Bengal during the northeast monsoon (1996) *J. Geophys. Res.– Oceans* **101**, C6, 14, 011–14,025. **(4)** The western boundary current of the seasonal subtropical gyre in the Bay of Bengal (1993) *J. Geophys. Res. – Oceans*, **98**, C1, 945–954. **(5)** The coastal current off western India during northeast monsoon (1991) *Deep-Sea Res.* **38**, 12, 1517–1529.

Memberships: Fellow: INSA 98; NASI 2000; Indian Geophys. Union 88.

Awards & Distinctions: IASc Assoc. 84–87 • S S Bhatnagar Prize 92 • ISCA 92 New Millennium Science Medal 2000 • Normal D. Hill Mem. Gold Medal of Soc. of Biosci. 2000 • Distinguished Alumnus Award, IIT Bombay.

Shivanna, Kundaranahalli Ramalingaiah

Elected: 1985
Position: Hon. Sr Fellow, Ashoka Trust for Res. in Ecology and Environment, Bangalore
Specialization: Pollen Biology; Biotechnology
Date and Place of Birth: 30 June 1940; Tumkur, Karnataka
Parents: K Ramalingaiah and Gangamma
Spouse and Children: Pramila; one *s*, one *d*
Address: Ashoka Trust for Research in Ecology and Environment,
Royal Enclave, Srirampura, Jakkur Post, Bangalore 560 064, India
Tel. (080) 2363 5555 (O), (080) 2846 1452 (R), Mobile: 94495 43848
email: shivanna@atree.org

Education: Univ. of Mysore: BSc 61, MSc 63; Delhi Univ.: PhD 69.

Career: Univ. of Delhi, Dept of Botany: Res. Fellow 64–69, Lecturer 69–81, Reader 81–91, Prof. 91–2002; Royal Botanic Gardens, UK: British Council Visitor 74–75; Welsh Plant Breeding Station, UK: Royal Soc. Visitor 78, 80, 82; Univ. of Melbourne, Australia: Postdoc Fellow 87; Univ. of Siena, Italy: Res. Visitor 88, 90; Univ. of Saskatchewan, Canada: Vis. Prof. 92, 93; CIDA/NSERC: Res. Assoc. 94; Intl Crop Res. Inst. for Semi-arid Tropics, Hyderabad Vis. Sci. 96.

Scientific Work: Worked extensively on pollen viability, storage, pollen-pistil interaction and incompatibility. Was the first to use test-tube fertilization to overcome sexual incompatibility; and to demonstrate the primary role of plasma membrane in pollen viability and storage. Besides making many conceptual advances, studies resulted in formulation and application of techniques to overcome self- and interspecific incompatibilities. By developing a sequential culture method for embryo rescue, the group has produced over 40 new intergeneric hybrids between crop brassicas and their wild relatives, and three cytoplasmic male sterile lines, thus making available a range of new genetic variability for *Brassica* breeders. Some of the materials generated are already under test with breeders. For the last five years, studies have been focussed to collect base line data on reproductive biology of endangered/economic species of Western Ghats. Main aim has been to see if these species have any reproductive constraints which have pushed these species to threatened category or reduced their yield. Extensive data has been collected on six of the threatened and overexploited species and two of the spices, cardamom and amomum.

Important Publications: **(1)** *The angiosperm pollen: structure and function* (1985) Wiley Eastern, New Delhi, (1989) John Wiley, USA. **(2)** *Pollen biology: A laboratory manual* (1992) Springer-Verlag, Berlin, Heidelberg, New York. **(3)** *Pollen biology and biotechnology* (2003) Science Publishers, Enfield, USA. **(4)** Pollen biotechnology *for* crop production and improvement (1997) Cambridge University Press, New York. **(5)** Induction of gamete compatibility and seed formation in axenic cultures of a diploid self-incompatible species of *Petunia* (1967) *Nature* (Lond) **216**, 937–939.

Memberships: Fellow: INSA 94; NAAS; NASI • Member; Intl Soc. of Plant Morphologists • Vice-President: Intl Assn. Sexual Plant Reproduction Research, The Netherlands • Additional Secretary: Intl Soc. of Plant Morphologists, Delhi.

Awards & Distinctions: Panchanan Maheshwari Medal, Indian Botanical Soc. 98 • S G Navashin Memorial Medal, Leningrad 90 • Govindappa D Arekal Memorial Lecture 2003 • L B Kajale Memorial Lecture, Indian Botanical Soc. 2003 • INSA Panchanan Maheshwari Memorial Lecture 2004.

Shorey, Tarlok Nath

Elected: 1985
Position: Sr Prof., TIFR., Mumbai
Specialization: Theory of Numbers
Date and Place of Birth: 30 October 1945; Patti, Punjab
Parents: Harnarain Shorey and Durga Devi
Spouse and Children: Savita; one *s*
Address: School of Mathematics, Tata Institute of Fundamental Research,
Homi Bhabha Road, Mumbai 400 005, India
Tel. (022) 2278 2222 (O), (022) 2215 1802 (R)
email: shorey@math.tifr.res.in; URL: http://www.math.tifr.res.in/~shorey

Education: Panjab Univ.: BA Hons 65, MA 67; Univ. of Bombay: PhD 76.

Career: TIFR, Bombay, School of Mathematics: Res. Asst, Assoc. Prof., Prof. 68–.

Scientific Work: Contributions relate to estimates for the theory of linear forms in logarithms of algebraic numbers; ingenious and original applications of Baker's method to Diophantine equations and Ramanujan's T-function.

Important Publications: *Exponential Diophantine equations* (1986) Cambridge Tracts in Mathematics.

Memberships: Fellow: INSA; NASI.

Awards & Distinctions: S S Bhatnagar Prize 87.

Shri Ranjan*

Elected: 1935
Specialization: Plant Physiology
Date and Place of Birth: 16 August 1899; Banaras, Uttar Pradesh
Parents: Babu Govind Das and Gokul Devi
Spouse and Children: Bhawani; two *s*, one *d*
Last Address: Agra University, Agra, India
***Deceased:** 8 July 1969

Education: BHU: BSc 21, MSc 23; Univ. of Cambridge, UK: MSc 25; Univ. of Toulose, France: DSc 32.

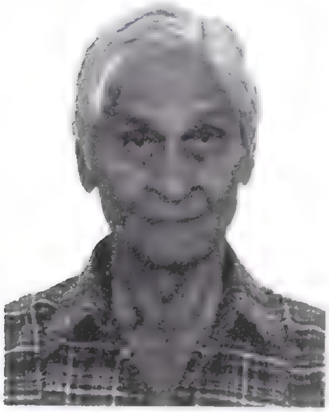
Career: Univ. of Allahabad, Dept of Botany: Reader 25–41, Prof. and Head 41–57, Dean of Sci. Faculty 44–55, Vice Chancellor 57–61; Agra Univ.: Vice Chancellor 64–67.

Scientific Work: Mainly concerned with plant respiration. Research indicated that light perceptibly affects the rate of respiration of a green plant. Interested in physiological investigations for the improvement of agricultural crops. Produced new mutant types of Pusa wheat by exposure to X-rays. Showed that application of molasses to soil results not only in an increase of soil nitrogen but also in the nitrogen content of the plants and their carbohydrate and chlorophyll contents and that yield was also greatly increased. By administering suitable concentrations of ethylene gas in the laboratory to healthy fruits of mango, was able to produce black-tip disease-like symptoms simulating those in fruits of mango trees growing near brick kilns. This work suggested that the black-tip disease of mango could be physiological, possibly caused by gases like ethylene evolved from brick kilns.

Important Publications: **(1)** A study of catalase reaction with special reference to respiration in plants (1931) *New Physiol.* **30,** 355–381. **(2)** Studies on the photochemical action of plants, Parts I to IV (1940) *J. Indian Bot. Soc.* **19,** 19–111. 3) Amino acid metabolism of *Nicotiana* leaves after removal from the plant (1956) *Nature* **177,** 235–236. (4) Metabolism of isolated leaves: 1. Changes in protein, soluble nitrogenous compounds, sugars, and organic acids in tobacco leaves in light and dark (1960) *Plant Physiol.* **35,** 714–725. **(5)** Effect of phosphorous deficiency on the metabolic changes in free amino acids in leguminous crop plants (1962) *Nature* **193,** 997–998.

Memberships: Fellow: INSA 51 • President: Botany Section of Indian Sci. Congress 41; Indian Botanical Soc. Jubilee Session.

Shrikhande, Sharadchandra Shankar



Elected: 1974
Specialization: Combinatorial Mathematics ; Graph Theory
Date and Place of Birth: 19 October 1917; Sagar, Madhya Pradesh
Parents: Shankar Govind Shrikhande and Parvati Bai
Spouse and Children: Shakuntala; two *s*, one *d*
Address: 7, Kautilya Marg, Chanakyapuri, New Delhi 110 021, India
Tel. (011) 4350 6888
email: drssshrik@yahoo.com

Education: Nagpur Univ.: BSc Hons 39; North Carolina, USA: PhD 50.

Career: College of Sci., Nagpur: Asst. Prof. 42–58; Univ. of Kansas, USA: Vis. Asst Prof. 51–53; Univ. of North Carolina, USA: Vis. Assoc. Prof. 58–60; BHU, Varanasi: Prof. of Statistics 60–63; Univ. of Bombay, Centre of Advanced Studies: Dir 63–78; Mehta Res. Inst., Allahabad: Dir 83–86.

Scientific Work: The main contributions has been in the construction and nonexistence of certain combinatorial configurations in finite sets of elements. The most noteworthy contribution has been the disproof of a celebrated conjecture of Euler made in 1782 about the nonexistence of a pair of orthogonal latin squares of order $4t + 2$ for any positive integer. Another important contribution made jointly with others is in proving that for a given n, any quasi-residual design with a sufficiently large block size can be embedded in a corresponding symmetric BIB design.

Important Publications: **(1)** On the falsity of Euler's conjecture about the nonexistence of two orthogonal Latin squares of order 4t+2 (1959) *Proc. Natl. Acad. Sci.* **45**, 734–737. **(2)** On the construction of set of mutually orthogonal Latin squares and the falsity of conjecture of Euler, *Tran. Am. Math. Soc.* **95**, 191–209. **(3)** Further results on the construction of mutually orthogonal Latin squares and the falsity of Euler's conjecture (1960) *Can. J. Math.* **12**, 189–203

(4) Graphs in which each pair of vertices is adjacent to the same number of the other vertices (1970) *Studia Sci. Math. Hungarica* **5**, 181–195. **(5)** Some further construction for G2 (d) graphs (1971) *Studia Sci. Math. Hungarica* **6**, 127–132.

Memberships: Member: Intl Statistical Inst., the Hague • Fellow: INSA 63; NASI 84; Maharashtra Acad. of Sci.

Awards & Distinctions: Lifetime Achievement Award, Intl Indian Stat. Assn.

Shyam Sundar

Elected: 2005
Position: Prof. of Medicine, BHU, Varanasi
Specialization: General Medicine; Infectious Diseases and Leishmaniasis
Date and Place of Birth: 30 November 1953, Muzaffarpur, Bihar
Parents: Shri Ram Kishan Prasad Makharia
Spouse and Children: Nisha Agrawal, two *d* (Shrinkhla, Neha)
Address: Institute of Medical Sciences, Banaras Hindu University, Varanasi 221 005, India
Tel. (0542) 230 7521 (O), (0542) 236 7795 (R), Mobile: 94530 48500
email: drshyamsundar@hotmail.com

Education: Inst. of Med. Sci. MBBS; BHU, Varanasi: 76, MD 81.

Career: Inst of Med. Sci., Dept of Medicine: Lecturer 81–90, Prof. 97–, Reader 90–97, Head 2001–04; S S Hospital, Dept of Medicine, ART Centre: Head 2004–; Kala-azar Med. Res. Centre: Nodal Offr 94–.

Scientific Work: Working continuously on the neglected disease kala-azar for two decades. First to describe the large scale treatment failure in Bihar. Chose an extremely backward region of the country for field work. Led the testing of the first oral drug miltefosine leading to its approval in March 2002. Demonstrated efficacy of a single dose liposomal amphotericin treatment. Diagnosis of kala-azar is by parasites demonstration in splenic smears, which is risky. Instrumental in clinical development of rapid k39 immunochromatographic test seeking help of Dr S Reed who invented k39 antigen. With this test, now it is possible to make the diagnosis of kala-azar with a drop of finger prick blood with reasonable accuracy. Also led the phase III clinical trial of paromomycin leading to its first approval for the treatment of visceral leishmaniasis.

Important Publications: **(1)** Injectable paromomycin for visceral leishmaniasis in India (2007) *N. Engl. J. Med.* **356**, 2571–2581. **(2)** Infectious disease (2006) *Davidson's Principles and Practice of Medicine*, Elsevier Publishers, Edinburgh, UK 283–376. **(3)** Oral miltefosine for Indian visceral leishmaniasis (2002) *N. Engl. J. Med.* **347**, 1739–46. **(4)** Miltefosine, an oral agent, for the treatment of Indian visceral leishmaniasis (1999) *N. Engl. J. Med.* **341**, 1795–800. **(5)** Trial of oral miltefosine for visceral leishmaniasis (1998) *Lancet* **352**, 1821–1823.

Memberships: Assn of Physicians of India • President: Leishmania Res. Soc.; India; Indian Geriatric Soc.; Indian Soc. of Haematology and Blood Transfusion • Fellow: INSA 2006; NASI 04; NAMS; Royal College of Physicians, London.

Awards & Distinctions: Netaji Oration Assn of Physicians of India • DB Chandra Oration • Ranbaxy Research Award • Dr. Rajendra Prasad Memorial Oration • Dr. Kamla Menon Research Award • Dr. Coelho Memorial Oration • Dr. M J Shah Memorial Award • Dr. N N Gupta Award.

Shyamasundar, Rudrapatna Kallikote

Elected: 1993
Position: Prof., TIFR, Mumbai
Specialization: Specification and Verification; Real-Time Programs; Logic Program;, Mobile Computing ; Computer Security
Date and Place of Birth: 11 January 1950, Mysore, Karnataka
Parents: R K Anandaramiah and Vishalakshi
Spouse and Children: Sharada, two s (Vivek, Aniruddha)
Address: Tata Institute of Fundamental Research, Homi Bhabha Road, Mumbai 400 005, India
Tel. (022) 2278 2288 (O) (022) 2280 4713 (R), Mobile: 9198183 20188
email: shyam@tifr.res.in; URL: http://www.tcs.tifr.res.in/~shyam

Education: Univ. of Mysore: BE 70; IISc, Bangalore: ME 72, PhD 75.

Career: TIFR: Vis. Fellow NCS DCT: 75–76, Res. Sci. 77–85, Reader 85–86, Assoc. Prof. 88, Prof., Sr Prof. Dean School of Technol. and Computer Sci.; Eindhoven Technological Univ., The Netherlands: Intl Res. Fellow 78–79 various assignments at IBM T J Watson Res. Center 84; State Univ. of Utrecht 83, Pennsylvania State Univ. 85–87; Univ. of Illinois, Univ. of California, ENSMP Sophia Antipolis, Verimag Grenoble, Univ. of Linkoping, Japan Advanced Inst. of Sci. and Technol., Max Planck Inst. for Computer Sci.

Scientific Work: Work on semantics of real-time distributed programs was the first that provided realistic parameterized models for realistic real-time distributed models having Ada like rendezvous mechanisms. Another pioneering work in the area of synchronous programming languages has been the proposal of the paradigm of communicating reactive processes (CRP); CRP provides a unified model for synchrony and asynchrony and enables specification and design of complex reactive systems. Has proposed a unified paradigm called multiclock esterel which subsumes CRP for specifying and designing synchronous and asynchronous hardware in a modular way. Built a prototype programming environment (including graphical and textual editors, simulators and verifiers) for the design, specification, modelling and verification of real-time systems and is in use in a large scale R & D environment in India.. Work on the design of combinators provides a uniform framework for the study of concurrent calculi with the motivation to have a parallel for concurrent calculi that could possibly lead to efficient concurrent implementations a la functional programs. Work on exception handling, was the first attempt to provide a methodology for designing robust programs supporting concurrency, Ada rendezvous and exceptions. Exploitation of inherent parallelism of specifications without foregoing security in concurrent langages can be seen in the design of CDL. Has developed novel automatable approach for checking termination of logic programs leading to the development of methodologies/tools that could verify large Prolog programs such as compilers. Contributed to the development of secure systems for e-commerce and cyber-security.

Important Publications: **(1)** Compositional semantics for real-time distributed programming language, *Information and Computation* **79**, 3, 210–256. **(2)** Static analysis of real-time distributed systems (1990) *IEEE Trans. Software Engineering* **SE-16**, 373–388. **(3)** Communicating reactive processes (1993) *20th ACM Symposium on Principles of Programming Languages*, Charleston, South Carolina, 85–99. **(4)** A transformational methodology for proving termination of logic programs (1998) *J. Logic Programming* **34**(1), 1–42. **(5)** Combinatory formulations of concurrent languages (1997) *ACM Trans. Programming Languages Systems* **19**, 6, 899–915. **(6)** Refinement calculus: A basis for translation validation, debugging and certification (2006) *Theoretical Computer Science* **354**, 153–168.

Memberships: Fellow: INSA 95; INAE 99; NASI 2001; IEEE; Computer Soc. of India; ACM.

Sibaiya, L*

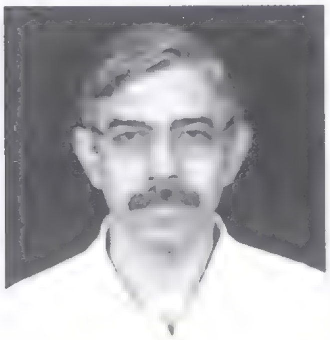
Elected: 1935
Last Address: Department of Physics, Central College, Bangalore, India
***Deceased**

Education: MSc, A.Inst. P.

Career: Central College, Bangalore: Asst Prof. of Physics; Intermediate Coll., Kolar: Supdt.

Important Publications: **(1)** Magnetic susceptibility of ice (1935) *Curr. Sci.* **4,** 41. **(2)** On the use of fused silica etalons in the study of hyperfine structure (1932) *J. Scientific Instruments* **9**, 7, 216.

Siddiqi, Imran



Elected: 2008
Position: Sci., CCMB, Hyderabad
Specialization: Genetics, Plant Development Genetic Recombination
Date and Place of Birth: 7 September 1957; Allahabad, Uttar Pradesh
Parents: Obaid Siddiqi and Asiya
Spouse: Jyotsna Dhawan
Address: Centre for Cellular & Molecular Biology, Uppal Road, Hyderabad 500 007, India
Tel. (040) 2719 2570 (O), (040) 2715 8119 (R), Mobile: 98666 33195
email: imransiddiqi@gmail.com

Education: IIT Bombay: MSc 81; Univ. of Oregan, USA: PhD 89.

Career: Univ. of Oregon, USA: Teaching Asst 82–83, Graduate Teaching Fellow 84–89, Doctoral Candidate 82–89; IISc: Postdoc 90–92; Cold Spring Harbor Lab US: Vis. Sci 98, Inst of Molec. Agrobiol., Singapore: Vis Prof. 2001; CCMB: Sci. 92–2002; Currently group leader at CCMB.

Scientific Work: Research is mainly focussed on the developmental biology of plant reproduction with an emphasis on the control of female meiosis and gametogenesis. The study of female gametophyte development is of special interest in that it affords the opportunity of addressing basic issues in plant developmental biology such as the generation of positional information leading to cell specification, and the role of cell interactions and programmed cell death, in the context of a small and well defined group of distinct and highly specialized cells that make up the female gametophyte. In order to understand the molecular mechanisms underlying ovule and female gametophyte development in higher plants, genetic approach starting with screens for mutants that affect female fertility using *Arabidopsis* as a model system has been taken up. Candidate gene approaches to address the function of *Arabidopsis* homologs of genes that are required for the control of meiosis in yeast have also been employed.

Siddiqi, Mohammad Raziuddin*

Elected: 1934
Specialization: Mathematics; Mathematical Physics
Date and Place of Birth: 2 January 1908; Hyderabad, Deccan
Children: one *s*, two *d* (A Taufiq, Shirin, Saida)
Last Address: Pakistan Academy of Sciences, 5-Constitution Avenue, Islamabad, Pakistan
***Deceased:** 2 January 1998

Education: Osmania Univ.: BA Hons 25; Univ. of Cambridge, UK: Maths Tripos 28; Univ. of Leipzig, Germany: PhD 31.

Career: Osmania Univ., Hyderabad: Prof. of Maths 31–43, Dir of Res. 43–48, Vice-Chancellor (Rector) 48–49; Univ. of Peshawar, Pakistan: Prof. of Maths and Dir of Res. 50–53, Vice-Chancellor (Rector) 53–58; Pakistan Atomic Energy Commission: Member and in-Charge of Planning & Res. 58–59; Columbia Univ., USA: Vis. Prof. 59–60; Sind Univ., Pakistan: Vice-Chancellor (Rector) 60–64; Govt of Pakistan, Head of Ministerial Dn for Sc. & Technol. 64–66; Univ. of Islamabad, Pakistan: Vice-Chancellor (Rector) 64–72; Midwest Universities Consortium, USA: Distinguished Vis. Prof. 73–74.

Scientific Work: Obtained far-reaching and comprehensive results in the theory as well as boundary value problems of generalized nonlinear partial differential equations of parabolic, elliptic and hyperbolic types, and in demonstrating the existence and uniqueness of the solutions. Also, obtained solutions of systems of nonlinear integrated equations and integro-differential equations.

Important Publications: **(1)** *Lecturer on quantum mechanics* (1937) Osmania Univ. **(2)** *Nonlinear partial differential equations* (1938) Univ. of Lucknow **(3)** *Theory of relativity* (1940) Amjuman Taraqqi Urdur, Delhi.

Memberships: Member: Intl Mathematical Union • Fellow: NASI 34; Pakistan Acad. of Sci. 53; Islamic Acad. of Sci.; INSA 37 • Chmn: Pakistan Math. Assn.

Awards & Distinctions: NASI Gold Medal 38 • DSc (hc) Osmania 42 • Commonwealth Universities Assn Star of the Order of Distinction by President of Pakistan 60 • Ground Cross of the Order Merit by President of Germany 62 • Crescent of the Order of Distinction by President of Pakistan 80 • President: ISCA Maths 41; Indian Math. Soc. 47–49; Calcutta Math. Soc. 50; Pak. Assn for Adv. of Sci 54; Pak Math Assn 52–72; Pak. Acad. Sci. 61–72.

Siddiqi, Obaid

Elected: 1968
Position: Emeritus Prof., NCBS, Bangalore
Specialization: Molecular and Behavioural Genetics
Date and Place of Birth: 7 January 1932; Basti, Uttar Pradesh
Parents: M A Qadeer Siddiqi and Umme Kulsum
Spouse and Children: Asiya; two *s*, two *d*
Address: National Centre for Biological Sciences, GKVK Campus, Bangalore 560 065, India
Tel. (080) 2366 6010 (O), (080) 2364 8507 (R)
email: osiddiqi@ncbs.res.in

Education: Aligarh Muslim Univ.: MSc 53; Univ. of Glasgow, UK: PhD 61.

Career: Aligarh Muslim Univ.: Lecturer 54–57; IARI, Delhi: Res. Scholar 57–58; Univ. of Glasgow, Dept of Genetics: 59–61; Cold Spring Harbor Lab., USA: Lallor Foundation Fellow 61; Pennsylvania Univ., USA: Postdoc Fellow 61–62; TIFR, Bombay, Molecular Biology Unit: Fellow, Assoc. Prof., Prof., Eminent Prof. 62–93; TIFR, Natl Centre for Biol. Sci., Bangalore: Dir 93–98, Emer. Prof. 98–. Yale Univ., Dept of Biophysics: Vis. Assoc. 66; Cambridge Inst. of Technology, USA: Vis. Prof. 68, 70–71; Gosney Fellow 72–73, Sherman Fairchild Distinguished Scholar 81–82, 86; JNCASR, Bangalore: Hon. Prof.; Natl Inst, of Advanced Studies, Bangalore: Sr Assoc.

Scientific Work: Research covers microbial genetics and genetic neurobiology. With Garen, discovered the suppressor of 'nonsense-mutations', which led to the elucidation of chain-terminating triplets in protein synthesis. Did some of the early experiments which show that recombinant bacteria inherit labelled DNA of biparental origin. At TIFR, demonstrated that DNA transfer can be associated from replication and that recombinants arise from unreplicated DNA. In early seventies, turned to behavioural genetics and neurobiology of *Drosophila*. Carried out with the group pioneeering work on taste and smell in the fruitfly, opening up the prospect of integrated genetic and neurobiological study of chemosensory perception.

Memberships: Fellow: Royal Soc. of London 84; INSA 77; TWAS 84; Maharashtra Acad. Sci. 70; NASI 90.

Awards & Distinctions: S S Bhatnagar Award 76 • Padma Bhushan 84 • Birla Smarak Kosh National Award 89 • Goyal Prize 91 • INSA Aryabhatta Medal 92 • Aligarh Univ., BHU: DSc hc • INSA Golden Jubilee Medal.

Siddiqi, Salimuzzaman*

Elected: 1935
Specialization: Natural Products Chemistry
Date and Place of Birth: 19 October 1897; Lucknow, British India
Parent: Sheikh Muhammad Zaman
Spouse and Children: Ethel Wilhelmina Schneeman and Shakira Begum;
three *s* (Rafeeyuzzaman, Arfiuzzaman, Asifuzzaman)
Last Address: Research Institute of Chemistry, University of Karachi, Karachi 75270, Pakistan
***Deceased:** 14 April 1994

Education: MAO College: graduated in Philosophy and Persian language 19; Univ. College, London: Medicine; Frankfurt Univ.: D Phil 27.

Career: A&U Tibbi College, Delhi: Dir 28–40; CSIR, New Delhi 40–50; NCL, Poona 50–53; Sci. and Industrial Res., Karachi, Pakistan: Dir 51–66; Univ. of Karachi, HEJ Res. Inst. of Chem: Prof. of Chem: Dir 66–94.

Scientific Work: First breakthrough in research during isolation of an antiarrhythmic agent from the roots of *Rauwolfia serpentina* – Ajmaline. Later on, also extracted other alkaloids from *Rauwolfia serpentina* that included Ajmalinine, Ajmalicine ($C_{21}H_{24}N_2O_3$), Isoajmaline, Neoajmaline, Serpentine and Serpentinine. Many of these are still used worldwide for treatment of mental disorders and cardiovascular ailments especially as anti-arrhythmic agents in Brugada syndrome. Was the first scientist to bring the anthelminthic, antifungal, antibacterial, and antiviral constituents of the Neem tree to the attention of natural products chemists. Extracted three bitter compounds from neem oil, named as nimbin, nimbinin and nimbidin, respectively. They serve as natural insecticides. In later career, continued to discover and isolate numerous unique anti-bacterial compounds from various parts (leaves, bark, etc.) of Neem and other plants. Established the Pakistan Council of Scientific and Industrial Research at Karachi.

Memberships: Fellow: Royal Soc. of London 61; TWAS 83; INSA 89 • Founding Fellow: Pakistan Acad. of Science 53; Islamic Acad. Sci., Jordon 88.

Awards & Distinctions: OBE: 46 • Soviet Acad. of Sciences, Gold Medal • President Pride of Performance Medal, Pakistan 66 • Hilal-e-Imtiaz 80 • DSc (hc) Karachi/Leeds Universities • TWAS Spl Award in Chem. 85.

Sikka, Devraj

Elected: 1984
Specialization: Monsoon; Tropical and Satellite Meteorology; Climate Change and Climate Research
Date and Place of Birth: 1 March 1932; Jhang Maghiana, now in Pakistan
Parents: Devi Dayal Sikka and Jwala Devi
Spouse and Children: Kamala; two *d* (Poonam, Geetha)
Address: 40, Mausam Vihar, Delhi 110 051, India
Tel. (011) 2241 0156 (R); Mobile: 99586 63373
email: drsikka@yahoo.com

Education: Agra Univ.: BSc 52, MSc 54.

Career: IMD: Meteorologist 54–64; IITM, Pune: Asst Dir, Dir 84–92; Florida State Univ., USA, Dept of Meteorology: Res. Assoc. 76; Colorado State Univ., USA, Dept of Atmospheric Sc.: Res. Assoc. 81; Intl TOGA Project Office, USA, Tropical Ocean Global Atmosphere Programme: Researcher 84–86.

Scientific Work: First to study the low-frequency (30–50 day) variability of the monsoon and the El Nino monsoon relationship. Developed objective analysis technique and models for short-range weather forecasting and structure of monsoon depressions in 1970s. Identified regional climate change scenarios based on past data and model results 1990–94.

Memberships: Indian Meterol. Soc. Monsoon, Droughts and Floods 98–2009; National Disaster, Sustainable Development, Climate Change 2000–2009.

Awards & Distinctions: B N Desai Award in Meteorology • Lifetime Achievement Award, Ministry of Earth Sciences 2007.

Sikka, Satinder Kumar

Elected: 1990
Position: Sci. Secretary, New Delhi
Specialization: High Pressure Physics; X-ray and Neutron Diffraction; Band Theory
Date and Place of Birth: 22 November 1942; Jhang, Maghiana
Parents: L C Sikka and Kaushalya Devi
Spouse and Children: Sunder Bala; two *s* (Pankaj Kumar, Kamal Kumar)
Address: Office of the Principal Scientific Adviser, Government of India,
Vigyan Bhavan Annexe, Maulana Azad Road, New Delhi 110 011, India
Tel. (011) 2302 2115 (O), (0129) 407 6016 (R), Mobile: 98182 88578
email: sksikka@nic.in

Education: Punjab Univ.: BSc 60; BARC Trg. School: Advanced PG Course 61; Univ. of Bombay: PhD 70.

Career: BARC: Sci. Offr 61–2002, High Pressure Phys. Dn Head, Condensed Matter Phys. Dn and Assoc. Dir, Solid State & Spectroscopy Group Outstanding Sci., Distinguished Sci. and Dir, Atomic & Condensed Matter Phys Group; Govt of India, Office of Principal Sci. Adviser: Sci. Secy 2002–09.

Scientific Work: Experimentally studied high pressure phase transitions in transition metals, rare earths, silicon and many other elements and also designed novel experiments on alloys of Group II metals which provided new insights into the mechanisms of these phase transitions. Theoretical work on shock equation of state of metals and new model for the difficult intermediate pressure region (5 to 100 megabars) are widely quoted in literature. Earlier contributions to neutron anomalous scattering and to direct methods were pioneering in the context of the phase problem in neutron diffraction crystal structure analysis. Was involved in the nuclear explosions carried out by India in 1974 and 1998. For the later he was the Leader of the Design Team.

Important Publications: **(1)** Structural phase transitions in Si and Ge under pressures up to 50 GPa (1984) *Phys. Lett.* **103A**, 137. **(2)** Neutron diffraction study of the structure of potassium oxalate monohydrate – lone pair coordination of the hydrogen bonded water molecule in crystals (1964) *Chem. Phys.* **41**, 3616. **(3)** Omega phase in materials (1982) *Prog. Mater. Sci.* **27**, 245–310. **(4)** Equation of state theories of condensed matter up to about 10 Tpa (1983) *Phys. Rep.* **102**, 121–177. **(5)** Pressure induced amorphization of materials (1996) *Prog. Mater. Sci. Res.* **40**, 1–77.

Memberships: Fellow: INSA 88; NASI 2003.

Awards & Distinctions: MRSI Medal 91 • H K Firodia Award for Excellence in Science & Technology 98 • Air Marshal Subroto Mukherjee Oration Medal 98 • Padma Shri 99 • MRSI-ICSC Superconductivity and Materials Science Annual Prize 2001 • M M Chugani Award for Excellence in Applied Physics 2002 • Homi Jehangir Bhabha Medal for Experimental Physics 2005 • Homi Bhabha Lifetime Achievement Award 2007.

Simon, Rajiah

Elected: 1991
Position: Sr Prof., IMSc, Chennai
Specialization: Quantum and Classical Optics; Quantum Information Theory; Foundations of Quantum Theory
Date and Place of Birth: 4 August 1948; Anbin Nagaram, Nellai District, Tamil Nadu
Parent: Asirvatham Rajiah, Gnanaselvam
Spouse and Children: Marietta Sudhavathanie; one *s*, one *d* (Benjamin Asir, Benohlina Neethi)
Address: The Institute of Mathematical Sciences, CIT Campus, Taramani, Chennai 600 113, India
Tel. (044) 2254 3120 (O), (044) 2451 0280 (R), Mobile: 94441 11865
email: simon@imsc.res.in

Education: St. John's College, Palayamkottai: BSc 70; American College, Madurai: MSc 72; IISc, Bangalore: PhD 85.

Career: Margoschis College, Nazareth: 72–74; American College, Madurai: Demonstrator: 74–76, Asst Prof. 76–85, IMSC Chennai: Asst Prof. 85–89, Assoc. Prof. 89–94, Prof. 94–.

Scientific Work: Exploiting the symmetry and symplectic group structure underlying paraxial statistical optics, has studied many basic beam propagation problems, including behaviour of variances of general beams; formulated the sympletic invariants associated with partially coherent beams which have since become standard beam-quality parameters, introduced a new class of partially coherent beams called the twisted Gaussian Schell-model beams, has made fundamental contributions to polarization optics in the paraxial regime, Gaussian optics and Gaussian–Wigner distribution functions, coherence theory, squeezed states of light, and optical manifestations of geometrical phase. Has performed a landmark experiment using a dynamic geometric phase for laser tuning, has generalized Hamiltons geometric representation called turns, originally formulated for the compact group SU (2), to the noncompact SU (1, 1); has shown that the well-known Gouy effect is a geometric phase of the Pancharatnam type associated with the underlying hyperbolic geometry; has discovered the

Peres–Horodecki separability criterion which has initiated enormous activity in quantum information theory of continuous vatiable systems.

Important Publications: **(1)** Evolving geometric phase and its dynamical manifestation as a frequency shift: An optical experiment (1988) *Phys. Rev. Lett.* **61**, 19–22. **(2)** Twisted Gaussian Schell model beams (1993) *J. Opt. Soc. Am.* A **10**, 95–109. **(3)** Bargmann invariant and the geometry of Gouy effect (1993) *Phys. Rev. Lett.* **70**, 880–883. **(4)** Quantum noise matrix for multimode systems: U(n) invariance, squeezing, and normal forms (1994) *Phys. Rev.* **A49,** 1567–1583. **(5)** Peres–Horodecki separability criterion for continuous variable systems (2000) *Phys. Rev. Lett.* **84**, 2726–2729.

Memberships: Fellow: INSA 99.

Awards & Distinctions: S S Bhatnagar Prize 93.

Singh, Anil Kumar

Elected: 2001
Position: Prof., IIT Bombay
Specialization: Organic Chemistry; Bioorganic Chemistry; Photochemistry; Photobiology
Date and Place of Birth: 2 April 1952; Bansgaon, Uttar Pradesh
Parents: Devi Prasad Singh and Kapurvasi Devi
Spouse and Children: Manorama; one *s*, one *d* (Prashant Kumar, Neetu)
Address: Department of Chemistry, Indian Institute of Technology Bombay, Powai, Mumbai 400 076, India
Tel. (022) 2576 7167 (O), (022) 2576 8167 (R)
email: Retinal@chem.iitb.ac.in; URL: http://www.chem.iitb.ac.in/people/Faculty/prof/aks.html

Education: Univ. of Gorakhpur: BSc 72, MSc 74; IIT Kanpur: PhD 78.

Career: Florida State Univ.: Postdoc Fellow 77–78; Univ. of Hawaii: Postdoc Fellow 79–81; Columbia Univ.: Postdoc Fellow/Res. Assoc. 81–82; Univ. of Roorkee: Lecturer 82, IIT Bombay: Lecturer 83–84; Asst Prof. 84–87, Assoc. Prof. 87–90, Prof. 90–, Head, Chem. Dept 93–96, Convener, Post Grad. Acad. Performance Evaluation Committee 98–2000, Chmn JEE 2004, Dean; Academic Programmes 2004–07; Univ. of Montreal Vis. Sci. 89; Regional Res. Lab. (CSIR) Jorhat: Dir 2002; Bundelkhand Univ.: Vice Chancellor 2007.

Scientific Work: Contributed to the understanding of structure and mechanisms of function of retinal-based biological photoreceptors, particularly bacteriorhodopsin (bR). Developed new bR analogues with novel optoelectronic properties. Also worked in the area of natural products isolation and characterization; studies of photoreactions in spatially confined spaces of supramolecular hosts systems; design of photoswitchable enzymes; synthesis of therapeutically useful retinoids, stabilization of retinoids in model membranes; synthesis, photochemical and photophysical studies of linear polyenes; design and development of neutral hydrophobic fluorescence probes for various applications including characterization of microenvironment of organized assemblies and biomolecular systems, etc. More recently has contributed towards design and development of novel phototriggers for biomolecular caging applications; design of radioprotective/antioxidant agents based on therapeutically significant vitamin A and E compounds. Has also initiated work on the synthesis, characterization and biomedical applications of fluorescent organic nanoparticles.

Important Publications: **(1)** Novel bacteriorhodopsin analogues based on azochromophores (1996) *J. Am. Chem Soc.* **118**, 6185–6191. **(2)** Fluorescence and photodimerization studies of cyano substituted diphenylbutadienes

(1997) *J. Phys. Chem.* **A101**, 3066–3069. **(3)** Liposome encapsulated vitamin A compounds exhibit greater stability and diminished toxicity (1998) *Biophys. Chem.* **73**, 155–162. **(4)** α,ω Diphenylpolyenes capable of exhibiting twisted intramolecular charge transfer fluorescence: A fluorescence probe study of nitro- and nitrocyano substituted 1, 4-diphenylbutadienes (2000) *J. Phys. Chem.* **A104**, 464–471. **(5)** Excited state properties of α,ω-diphenylpolyenes: Photophysical and photochemical studies of donor-acceptor diarylbutadienes (2000) *Photochem. Photobiol.* **71**, 387–396.

Memberships: Fellow: NASI 97; Maharastra Acad. of Sci.

Awards & Distinctions: T R Seshadri Memorial Lecture Award 2009; Indian Soc. Chemists & Biologists Award 2009.

Singh, Bawa Kartar*

Elected: 1934
Specialization: Chemistry; Stereo-chemistry
Date and Place of Birth: 17 April 1886; Amritsar, Punjab
Parents: Bawa Jiwan Singh
Last Address: Gitangali, BHU Campus, Varanasi 221 005, India
***Deceased:** 15 June 1960

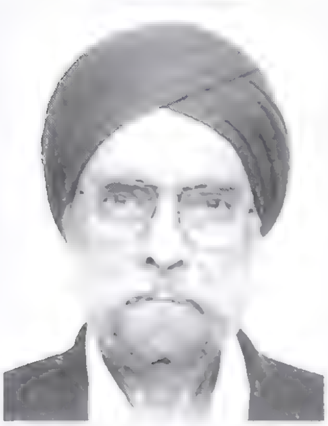
Education: Univ. of Cambridge: Tripos 1906, ScD 41; Univ. of Dublin: ScD 40; Univ. of Cambridge: ScD 41.

Career: Government College, Dacca: Prof. of Chem. 10–18; Govt College, Lahore: Head of Chem 18–21; Patna Collge: Prof. of Chem. 21; Ravenshah College, Cuttack: Prof. 21; Sci. College, Patna: Head of Chem. 36–40, concurrently Chem. Adviser to Govt of Bihar; Univ. of Allahabad: Prof. of Chem. 40–46, Emeritus Prof. 46; Punjab Inst. of Chem., Lahore: Hon. Prof. and Assoc. Dir 46–47; Banaras Hindu Univ., Varanasi: Hon. Prof. 48–60.

Scientific Work: Worked mostly in the field of stereochemistry. Prepared and resolved several substituted azonium compounds containing an asymmetric nitrogen atom. While studying the valency of two directly linked nitrogen atoms, worked out a new method for the preparation of tertiary amines. Later found out several additive compounds of thiocarbamide with azonium iodide. The optical rotatory power of substituted quaternary azonium compounds in solution was studied. Brought out the relation between optical activity and chemical constitution of different types of compounds. The optically active compounds studied were derivatives of the natural dextro, camphor, laevo camphor. Also took up the study of the structure and kinetics of mutarotation of stereoisomeric oxymethylene camphors. In all the studies, repeatedly emphasized that comparison of rotatory power should be made only under similar conditions of temperature, concentration, solvent and between compounds having similar dispersion. All the compounds examined were solids and their rotatory power was studied in aqueous and/or non-aqueous solvents.

Memberships: Fellow: INSA 35; Indian Chemical Soc.

Singh, Balwant



Elected: 1989
Specialization: Algebraic Geometry ; Commutative Algebra
Date and Place of Birth: 7 February 1940; Pindi Bahawaldin, West Punjab
Parents: Sunder Singh Bagga and Lajwanti
Spouse and Children: Jaspal; one *s*, one *d* (Chetan, Kiran)
Address: 105, Vaigyanik Society, Plots 58-59, Sector 14, Vashi, Navi Mumbai 400 703, India
Tel. (022) 2788 2238 (R), Mobile: 98924 50089
email: balwantbagga@gmail.com

Education: Bombay Univ.: BA 65; Bombay Univ.: MSc 69; PhD 70.

Career: TIFR, Bombay: Res. Student 65, Res. Assoc. 66–67, Res. Fellow 67–71, Fellow 71–76, Reader 76–91, Assoc. Prof. 91–94; Prof. 94–2000; IIT, Mumbai: Prof. 2000–05; Mathematisch Institut, Netherlands: Vis. Sci. 71–72; Purdue Univ., USA: Vis. Asst Prof. 72–73, Vis. Assoc Prof. 75, 77–78, Vis. Prof 2006; ETH, Switzerland: Vis. Fellow 78; Martin-Luther-Universitaet, Germany: Vis. Prof. 78; Univ. of Poona: Vis. Prof. 82; Panjab Univ: Vis. Fellow 83; Univ. of Bonn, Germany: Vis. Fellow 83; Queen's Univ. Canada: Vis. Prof. 83–84, 90–91, 99, 2001; McGill Univ. Canada: Vis. Assoc. Prof. 85.

Scientific Work: Computed divisor class groups of rings of invariants and described unique factorization properties of such rings; found a sharp upper bound for the group of automorphisms of a curve of genus at least two in positive characteristic; found a numerical criterion for the permissibility of a blowing-up of an algebraic variety and described the effect of blowing-up (permissible or non-permissible) on the local Hilbert functions; classified embeddings of a curve with one place at infinity in terms of the characteristic pairs at infinity; found differential criteria for certain properties of singularities; proved some cases of Nakai's conjecture relating nonsingularity with the algebra of differential operators; found an elementwise characterization of subintegrality in characteristic zero and used it to clarify the relationship between the Picard group, subintegrality and seminormalization in characteristic zero; using different techniques found an analogous relationship in positive characteristic also; found a universal counterexample to a question concerning seminormality.

Important Publications: **(1)** Effect of a permissible blowing-up on the local Hilbert functions (1974) *Inventiones Math.* **26**, 201–212. **(2)** A numerical criterion for the permissibility of a blowing-up (1976) *Compositio Mathematica* **33**, 15–28. **(3)** Embeddings of certain curves in the affine plane (1978) *Amer. J. Math.* **100**, 99–175. **(4)** Differential operators on a hyper-surface (1986) *Nagoya Math. J.* **103**, 67–84. **(5)** Subintegrality, invertible modules and the Picard group (1993) *Compositio Mathematica* **85**, 249–279.

Memberships: Member: National Board for Higher Mathematics; Governing Council of Bhaskaracharya Pratishthana • Fellow: INSA 92.

Singh, Bam Bahadur

Elected: 1974
Specialization: Radiation Biology; Biophysics; Intellectual Property Rights and Constitutional Law; other Acts and Laws
Date and Place of Birth: 20 January 1938; Ghatampur, Pratapgarh, Uttar Pradesh
Parents: Shitala Bux Singh and Munraj
Spouse: Kajal
Address: D-7, Fair Lawn, V N Purav Marg, Chembur, Mumbai 400 071, India
Tel. (022)-22049723 (O), (022) 2520 7210 (R), Mobile: 98210 05336
email: drbbsingh@mtnl.net.in, drbbsingh@iprpluslaw.com; URL: www.iprpluslaw.com

Education: Univ. of Lucknow: BSc 57, MSc 59, Univ. of London: PhD 66.

Career: Univ. of Hannover, Germany: Vis. Prof. 72; IAEA Vienna, Sec. of Radiation Biology: Head 75–77; BARC: 67–98, Phys. Radiobiology Sec. Head 67, Radiation Biology Section Head 85–91, Radiation Biology and Biochemistry Dn Head 91–98; Bombay High Court: Practising lawyer and Sci. Adviser at present.

Scientific Work: Investigated sequence of events following absorption of radiation in DNA and its constituents, proteins and amino acids identifying their primary ions and the corresponding secondary neutral radicals with their biological consequences in terms of cellular lethality. Also modified these effects by physical and chemical means like hyperthermia and membrane interacting drugs and has delineated the mechanisms theirof. Results are now admirably expolited in treatment of human malignancies by radiations in combination with such modifiers.

Important Publications: **(1)** Indo–US 123 agreement – A saga of controversies and compromises (2008) *Intl. J. Nuclear Law* **2**, 78. **(2)** The Hyde Act – India's Nuclear Dilemma (2007) *Atoms for Peace – An Intl. J.* **1**, 307. **(3)** *The Indo-US Civil Nuclear Cooperation,* Special Issue as (Guest Editor) 2 (2008). **(4)** Primary radical formation in irradiated proteins (1965) *Nature (London)* **206**, 1314–1315. **(5)** Chemical study of the radiosensitization of *M. Sodonesis* by iodine compounds (1967) *Nature (London)* **216**, 372–374.

Memberships: Fellow: NASI 90; Rotary International & Masonic Fraternities in India and abroad.

Awards & Distinctions: Ward Vidyant Gold Medal Jack Goldberg Award • Soc. for Cancer Research & Communication Award • Swatantryaveer Savarkar Award • 25-Year Service to Freemasonry Award.

Singh, Bhola Nath*

Elected: 1934
Specialization: Plant Physiology; Agriculture; Agronomy
Date and Place of Birth: 30 September 1901; Kuraon, Allahabad, Uttar Pradesh
Parents: Siddheswari Singh and Devakali
Spouse and Children: Prem Mohini; two *s*, two *d*
Last Address: 1, Faijabad Road, I J College Crossing, Lucknow 226 007, India
***Deceased:** 7 June 1984

Education: BHU, Varanasi: BSc 22, MSc 24, DSc 27.

Career: BHU, Varanasi: Res. Asst 22–25, Asst Prof. of Plant Physiology 25–30, Univ. Prof. of Plant Physiology (also Kapurthala Chair of Agricultural Botany, Lord Erwin Chair of Agri.) 30–44, Dean of Faculty of Technol. 40–44; Inst. of Agri. Res.: Founder Dir 31–44, Dir of Wheat-Sugarcane Project 35–44; Natl Planning Committee (Planning Commission) on Crop Planning and Production, Govt of India: Member and Secretary 38–47; Inst. of Crop Physiology, Lucknow, UP: First Crop Physiologist to State 48–60.

Scientific Work: Made critical studies in the field of photosynthesis and pointed out the limitations of Blackmans law of limiting factors. Made significant contributions in the fields of irradiation, photoperiodism and vernnalization, mineral nutrition, plant-water relations, chemical weed control and growth substances. Fundamental research produced results of importance for improving agriculture in UP and the country as a whole. Established the Institute of Agricultural Research and the Department of Plant Physiology at BHU.

Memberships: Member: British Ecological Soc.; Biochemical Soc., London; Botanical Soc. of America; American Soc. of Plant Physiologists; American Soc. of Agronomy; American Genetic Assn; Indian Botanical Soc.; Indian Soc. of Soil Science • Dip. hc Medal of Merit (Academia de Sciences, Brazil) • Fellow: INSA 41; NASI; Royal Horticultural Soc., London.

Singh, Digvijai

Elected: 1981
Position: Visitor, Amity Univ., Uttar Pradesh
Specialization: Dynamics of Mechanical Systems; Stress Analysis; Tribology
Stability of Vehicles; Tyre Mechanics; Pavement Engineering
Date and Place of Birth: 11 December 1934; Lucknow, Uttar Pradesh
Parents: S N Singh and Saraswati Devi
Spouse and Children: Usha; one *d* (Nandita)
Address: Apartment 1002, Tower 2, Sunbreeze Apartments, Vaishali, Sector 5, Plot 3,
Ghaziabad 201 010, India
Tel. (0120) 243 1425 (O), (0120) 412 7783 (R), Mobile: 98106 03439
email: dvsingh@comcast.net, dvsingh@akcgroup.com

Education: Allahabad Univ.: BSc 53; Univ. of Roorkee: BE Mech. 56, BE Civil 57; Univ. of Wisconsin, USA: MS 62, PhD 64.

Career: Univ. of Roorkee: Lecturer 58–61, Reader 64–65, Assoc. Prof. 65–67, Prof. 67–90; Univ. of Wisconsin, USA: Grad. Scholar 61–64; CRRI, New Delhi: Dir 90–96; AICTE: Vice Chmn 96–2000; Univ. of Roorkee and later IIT Roorkee: Vice Chancellor Dir 2000–01; Amity Univ., UP: Visitor 2006–.

Scientific Work: On a project sponsored by Harley Davidson Motor Co., studied the dynamic stability of two-wheeled vehicles including tyre pavement interactions. Research includes simulation of vehicle dynamics on a more fundamental level. Has done extensive work on fluid film seals and lubrication to include hydrostatic and hydrodynamic bearings with complexities of fluid rheology, presence of containments, geometry (citron shape, multi-lobe, tilting and rolling pads), Newtonian and non-Newtonian constitutive behaviour of lubricants, micropolar fluids, piezothermoviscous effects, gas bearings in laminar and superlaminar regime and magnetohydrodynamic bearings. Work also includes pneumatic tyre modelling and chassis design. Has provided consultancy services in these areas to several leading industries. In welding physics and engineering, work includes welding arc stability, molten metal transfer, spatter, heat effected zone, changes in crystallographic structures, and their correlation with mechanical properties.

Important Publications: **(1)** A mathematical model for small size pneumatic tyres (1969) *J. Inst. Eng.* **49**, 7. **(2)** Effect of welding parameters and magnetic field on penetration and weld metal porosity (1976) *WRA J. Welding Res. Council* NY, USA V.XXI, **N6**, 39–46. **(3)** Stability and relative stability of porous bearings with axes skewed (1974) *ASME J. Lubrication Technol.* 621–630. **(4)** Nonlinear response of hydrodynamic seals (1982) *Wear* **82**, 153–156. **(5)** Elastohydrodynamic effects in elliptical bearings (1989) *Tribol. Intl* **22**, 1, 43–49.

Memberships: Fellow: IE(I) 68; INSA 83; INAE 87; NASI 90 • Member: Indian Soc. Mech. Engineers; Tribiology Soc. of India; Indian Inst. of Public Admin; Geotechnical Soc. of India.

Awards & Distinctions: Khosla Res. Prizes 70, 71, 78, 79, 87, 90 • Institution of Engineers Prizes 74–75, 82 • S S Bhatnagar Prize 78 • IMDA Silver Jubilee Award 86 • INSA GP Chatterjee Memorial Lecture 96 • Mech. Engg Design Ward 97 • Hon. Member of Tribology Soc. of India 98 • Eminent Engineering Personality (Institution of Engineers) 2003 • Distinguished Alumnus, IIT Roorkee 2007 • INAE Jai Krishna Memorial Award 2007.

Singh, Harkesh Bahadur

Elected: 2007
Position: Prof., IIT, Bombay
Specialization: Main Group Chemistry; Organochalcogen Chemistry; Organometallic Chemistry
Date and Place of Birth: 1 March 1956; Basti, Uttar Pradesh
Parents: Sri Raj and Mevati Devi
Spouse and Children: Usha Singh; two *d* (Namrata, Kamakshi)
Address: Department of Chemistry, Indian Institute of Technology Bombay, Powai, Mumbai 400 076, India
Tel. (022) 2576 7190 (O), (022) 2577 0675 (R), Mobile: 93238 40676
email: chhbsia@chem.iitb.ac.in

Education: Lucknow Univ.: BSc 74, MSc 76, PhD 79; Aston Univ., UK: PhD 83.

Career: IIT Delhi: Pool Offr 84; IIT Bombay: Lecturer 84–87; Asst Prof. 87–90, Assoc. Prof. 90–95, Prof. 95–; U C Santa Barbara: Vis. Res. Sci. 88.

Scientific Work: The long-term research objectives of the group at IIT Bombay are centred around design, synthesis and structural studies of novel organometallic derivatives of sulfur – selenium and tellurium and their applications in the areas of; synthetic metals, organic synthesis and catalysis, ligand chemistry, MOCVD precursors, selenoenzyme mimics.

Important Publications: **(1)** Glutathione peroxidase-like antioxidant activity of diaryl diselenides: A mechanistic study (2001) *J. Am. Chem. Soc.* **123**, 839–850. **(2)** Heteroatom-directed aromatic lithiation: A versatile route to the synthesis of organochalcogen (Se, Te) compounds (2002) *Acc. Chem. Res.* **35**, 226–236. **(3)** The isolation and crystal structure of a novel cyclic selenenatge ester derived from bis (2,6-digormly-4-t-butylphenyl) diselenide and its excellent glutathione peroxidase like activity (2004) *Angew. Chem. Int. Ed. Engl.* **43**, 4513. **(4)** Synthesis of a novel metallophilic metallamacrcycle: A Hg ...Cu ...Hg ...Hg''...Cu'...Hg' interaction (2005) *Angew. Chem. Int. Ed. Engl.* **44**, 1715–1717. **(5)** Reaction of a metallamacrocycle leading to mercury(II)...palladium(II)... mercury(II) interaction (2009) *Angew. Chem. Int. Ed.* **48**, 1987–1990.

Memberships: Fellow: NASI 98; Royal Soc. of Chem. 99.

Awards & Distinctions: UGC Hari OM Award • CRSI Bronze Medal • Ramanna Fellowship.

Singh, Inderjit*

Elected: 1944
Specialization: Physiology
Date and Place of Birth: 20 August 1909; Maymo, Burma
Parents: Sardar Singh and Mehr
Spouse and Children: Sunita; two *s*, one *d*
Last Address: Medical College, Agra
***Deceased:** 5 June 1972

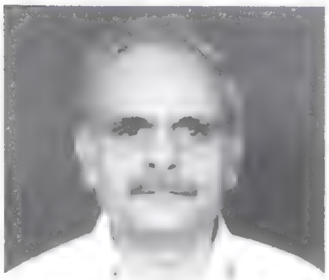
Education: Univ. of Rangoon, Burma: MBBS 31; Univ. of Cambridge, UK: PhD 37; Univ. of London, UK: LRCP, MRCS 38.

Career: Medical College, Burma: Demonstrator in Physiology; Haffkine Inst., Bombay: Pharmacologist 38; Indian Med. Service: 39–44; Dow Med. College, Pakistan: Prof. of Physiology 44–48; S N Med. College, Agra: Head of Physiology 49–68, Principal 68–69, Dutch Fellowship 60.

Scientific Work: Well known for work on life without breathing which made it possible to keep dogs alive for 80 minutes without breathing. This was done by two methods: by lowering the metabolism of the animal by hypothermic and the reduced oxygen requirements met by I/V injection of oxygen; the second method involved injection of oxygen at body temperature at I/V in a high pressure at 3 Atm of air pressure. Equally notable were studies on electrical and mechanical activity of the frog's heart in electrolyte-free solution; tryptaminergic, histaminergic and kininergic fibres in frog vagus nerve; source of acetylcholine, adrenaline and noradrenaline on nervous stimulation of vagus and sympathetic nerve to frog's heart; reactions of depolarized unstriated muscles; duel contractile system, in unstriated muscle, etc.

Memberships: Fellow: INSA 52; Indian Acad. of Medical Sci.; Physiological Soc.; UK.

Singh, Jamuna Sharan



Elected: 1985
Position: Emeritus Prof., BHU, Varanasi
Specialization: Plant Ecology; Ecosystems Analysis; Eco-physiology
Date and Place of Birth: 26 December 1941; Allahabad, Uttar Pradesh
Parents: Vishambher Sharan Singh and Chandrakali Devi
Spouse and Children: Tripura; two *s*, two *d* (Atul, Hema, Anupa, Anuj)
Address: Department of Botany, Banaras Hindu University, Varanasi 221 005, India
Tel. (0542) 236 8399 (O), (0542) 236 9093 (R), Mobile: 93351 78355
email: jssingh@bhu.ac.in, singh_js1@yahoo.com

Education: Univ. of Allahabad: BSc 57, MSc 59; BHU: PhD 67.

Career: BSI: Res. Fellow 60–63, BHU: Res. Fellow 63–64, Res. & Teaching 64–68, Prof. 84–2004, Emeritus Sci. 2004– ; Kurukshetra Univ.: Lecturer 68–75, Colarado State Univ.; USA: Vis. Sci. 71–74, Vis. Prof. 93–94; School of Planning and Architecture, New Delhi: Reader in Ecology 75–76; Kumaun Univ.: Reader 76–84.

Scientific Work: While at Kurukshetra, conducted intensive studies on tropical grasslands. At Kumaun worked on oak & pine forests and alpine grasslands, and at Colarado on temperate grasslands, and at Varanasi on dry tropical forest, restoration ecology and biodiversity. Made significant contributions towards understanding the development, dynamics and disruption of natural ecosystems in order to provide a scientific basis for environmental protection, management and conservation. Work is characterized by discovery of new facts and concepts concerning ecosystem functioning, new methodology for biological resource study, and collection of hitherto unavailable data on a variety of ecosystems for evolving management strategies.

Important Publications: **(1)** Rainfall and grazing effects on net primary productivity in a tropical savanna, India (1992) *Ecology* **73**, 6, 2007–2021. **(2)** Microbial C, N and P in dry tropical forest soils: Effect of alternate land-uses and nutrient flux. (1991) *Soil Biol. Biochem.* **23** 117–124. **(3)** Microbial biomass acts as a source of plant nutrient in dry tropical forest and savanna (1989) *Nature* **338**, 499–500. **(4)** Replacement of oak forest with pine in the Himalaya affects the nitrogen cycle (1984) *Nature* **311**, 54–56. **(5)** Tropical forest structure and diversity in relation to altitude and disturbance in a biosphere reserve in central India (2008) *App. Veg.Sci.* **11**, 461–470.

Memberships: Fellow: INSA 84; NASI 88; TWAS 2002 • President: Environmental Sciences; ISCA 2004.

Awards & Distinctions: S S Bhatnagar Prize • Pitamber Pant National Environment Fellowship • Swami Pranavanand Saraswati Award • Birbal Sahni Gold Medal • Sustainable Dev Lifetime Achievement Award, AWA • INSA S B Saksena Memorial Medal • NASI Biodiversity Lecture Award.

Singh, Kulinder Pal

Elected: 2000
Position: Prof., TIFR, Mumbai
Specialization: X-ray Instrumentation for Astronomy; Active Galactic Nuclei; Hot Interstellar and intracluster Medium; Supernova Remnants
Date and Place of Birth: 19 June 1952; Patiala, Punjab
Parents: Jaspal Singh and Trilochan Kaur
Spouse and Children: Gagan Roop Kaur; one *s*, one *d*
Address: Department of Astronomy & Astrophysics, Tata Institute of Fundamental Research,
Homi Bhabha Road, Mumbai 400 005, India
Tel. (022) 2278 2376 (O), (022) 2280 4561 (R)
email: singh@tifr.res.in; URL: http://www.tifr.res.in/~singh

Education: Punjabi Univ., Patiala: BSc 71; IIT, Delhi: MSc 73; Bombay Univ.: PhD 82.

Career: TIFR: Res. Scholar 73–77, Res. Assoc. 77–82, Fellow 82–88, Reader 88–94, Assoc. Prof. 94–98, Prof. 98–2008, Sr Prof. 2008–; Penn. State Univ., USA: Postdoc Res. Assoc. 84–85; Danish Space Res. Inst.: Vis. Prof. 85–87; NASA, Sr NAS/NRC Res. Assoc. 94–96.

Scientific Work: Discovery of soft X-ray excess in Seyfert galaxies – a new class; discovery of a massive cooling flow in a poor cluster, multi-wave study of the entire Eridanus region of the ISM, identifying a progenitor based on elemental abundances in a supernova remnant, determining elemental abundances of coronal emission in cool stars, development of grazing incidence mirrors and a CCD camera for X-ray astronomy.

Important Publications: **(1)** A multiwavelength study of the Eridanus soft X-ray enhancement (1993) *Ap. J.* **406**, 97. **(2)** Corona(e) of AR Lacertae. I. The temperature and abundance distribution (1996) *Ap. J.* **456**, 766. **(3)** Strong X-Ray absorption in a broad absorption line quasar: PHL 5200 (1995) *Ap. J. Lett.* **455**, L9. **(4)** A study of coronal X-ray emission from short-period Algol binaries (1995) *Ap. J.* **445**, 840. **(5)** Observation of soft X-ray spectra from a Seyfert 1 and a narrow emission-line galaxy (1985) *Ap. J.* **297**, 633.

Memberships: Fellow: NASI 2006; Intl Astronomical Union; Astronomical Soc. of India.

Awards & Distinctions: Astronautical Soc. of India Award for Space Sciences & Applications 2004.

Singh, Lalji

Elected: 1989
Position: Bhatnagar Fellow, CSIR
Specialization: Molecular Biology; DNA Fingerprinting; Wildlife Conservation
Date and Place of Birth: 5 July 1947; Jaunpur, Uttar Pradesh
Parents: Surya Narayan Singh and Raghuraji Debi
Spouse and Children: Amarawati; two *s*
Address: Centre for Cellular and Molecular Biology, Uppal Road, Hyderabad 500 007, India
Tel. (040) 2716 0053 (O), (040) 2716 0555 (R); Mobile: 98480 37558
email: lalji@ccmb.res.in

Education: BHU, Varanasi: BSc Hons 64, MSc 66, PhD 71.

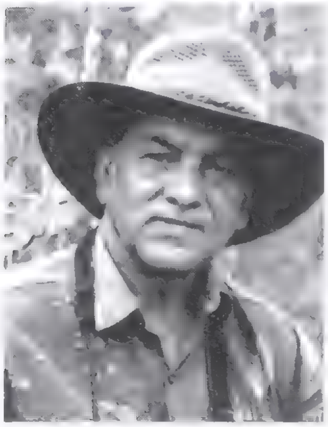
Career: BHU, Varanasi, Dept of Zoology: Jr Res. Fellow 66–70, Res. Assoc. 70–72; Calcutta Univ., Dept of Zoology: Sr Res. Fellow 72–74; Pool Offr 74, Guest Sci. 76–77; Univ. of Edinburgh, Inst. of Animal Genetics, UK: Postdoc Res. Fellow 74–76, Res. Assoc. 79–87; Australian Natl Univ., Australia: Vis. Fellow 79; CCMB, Hyderabad: Sci. 87–90, Dy Dir 90–96, Offr on Spl Duty 96–97, Dir 98–2009, Bhatnagar Fellow 2009–.

Scientific Work: Isolation of highly conserved sex chromosome-specific satellite DNA 'Bkm' from the female Indian snake (banded krait), made the beginning of our understanding of molecular basis of sex-determination. Revealed for the first time that centrometric region of the mouse Y chromosome is sex-determining, which is duplicated and transposed to the distal end in the case of rearranged Y chromosome in the carrier mouse which, when transferred to the distal region of the X chromosome, causes a female mouse to develop as a male. This has now become the basis of our understanding of sex-reversal in humans. Based on the Bkm sequences, has developed DNA probes and a simplified technique for DNA fingerprinting for its use in forensic investigations, civil matters, medical diagnosis, pedigree analysis and identification of seed stocks and germ plasm. Using the indigenously developed probe, has for the first time shown that DNA fingerprinting can effectively be used to infer the genetic affinities among related group of animals. Human genetic diversity study led to the mapping of gene involved in sudden heart attack and trading the origin of Indian populations.

Memberships: Fellow: NASI 91; INSA 94; TWAS 2001 • Member: Indian Soc. of Cell Biology; Soc. of Biological Chemists of India; Indian Soc. of Human Genetics.

Awards & Distinctions: S P Bose Memorial Medal of Zoological Soc. 73 • INSA Young Scientists Medal 74 • Commonwealth Scholarship 74–76 • CSIR Technol. Award for Biological Science 92 • President: P M Bhargava Foundation • Padma Shri 2004.

Singh, Mewa



Elected: 2008
Position: Prof., Univ. of Mysore
Specialization: Animal Behaviour; Wild Life Ecology; Sociobiology
Date and Place of Birth: 11 April 1951; Maler Kotla, Punjab
Parents: Bachan Singh and Ram Kaur
Spouse: Mridula H
Address: Department of Studies in Psychology, University of Mysore, Manasagangotri,
Mysore 570 006, India
Tel. (0821) 241 9372 (O), (0821) 251 4239 (R), Mobile: 94486 03506
email: mewasingh@bsnl.in, msingh@psychology.uni-mysore.ac.in

Education: Punjabi Univ., Patiala: BA 71; Panjab Univ., Chandigarh: MA 73; Univ. of Mysore: PhD 78; Smithsonian Inst., Washington: Cert. in Wildlife Mgt 85.

Career: Meerut Univ.: Res. Fellow 73–74; Univ. of Mysore: Lecturer 77–85, Reader 85–94, Prof. 94–.

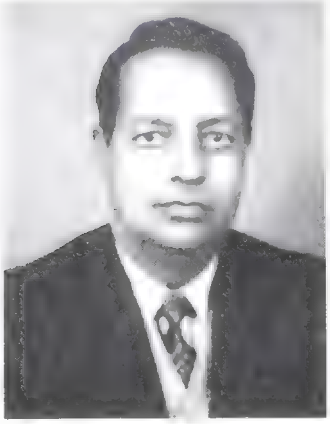
Scientific Work: Unique blend of behavioural, demographic and ecological studies on many hitherto poorly understood Indian mammalian species has helped bridge the gap between behavioural and conservation biology, and raised the stature of Indian primatology worldwide. Research has led to enhanced understanding of ontogeny of social behaviour, resource partitioning strategies, and impacts of habitats and their alteration on behaviour, demography, life-history and ecology. At academic level, research has contributed to the understanding of ecology and evolution of animal behaviour. At applied level, research helps develop better strategies for conservation and management of endangered species. Has virtually introduced the solitary and nocturnal primate, the slender Loris, to the word of ecological and behavioural sciences. An internationally acclaimed expert on the most endangered species of macaques, the lion-tailed macaque of the Western Ghats.

Important Publications: **(1)** *Macaque societies: A model for the study social organization* (2004) Cambridge: Cambridge University Press, England 418. **(2)** Behavioral responses of lion-tailed macaque to a changing habitat in a tropical rainforest fragment in Western Ghats, India (2001) *Folia Primatologica,* Switzerland **72**, 278–291. **(3)** Distribution, population structure and conservation of lion-tailed macaque (*Macaca silenus*) in Anaimalai Hills, Western Ghats, India (2002) *Am. J. Primatol.* (USA) **57**, 91–102. **(4)** Resource partitioning and interspecific interactions among sympatric rainforest arboreal mammals of the Western Ghats, India (2006) *Behavioural Ecology,* USA **17**, 479–490. **(5)** Between-group encounters among bonnet macaques (*Macaca radiata*) (2004) *Behav. Ecol. and Sociobiol.* (USA) **56**, 217–227.

Memberships: Fellow: INSA 2009.

Awards & Distinctions: Golden Jubilee Science Award, Univ. of Mysore.

Singh, Randhir



Elected: 1994
Position: CSIR Emeritus Sci., Kurukshetra Univ.
Specialization: Plant Biochemistry; Biotechnology
Date and Place of Birth: 21 January 1944; Sanch, Haryana
Parents: Amar Singh and Panmeshwari Devi
Spouse and Children: Raj Bala; one *s*, three *d*
Address: Department of Biotechnology, Kurukshetra University, Kurukshetra 136 119, India
Tel. (01744) 23 8679/2517 (O), Mobile: 94163 83002
email: randhirbiotech@yahoo.com

Education: Punjab Agri. Univ.: BSc 64, MSc 66, PhD 69.

Career: Haryana Agri. Univ., Hisar: Asst Prof. 69–71, Assoc. Prof. 71–80, Prof. 80–2004, Dept of Chem. & Biochem.: Head 83–86, College of Basic Sci. & Humanities: Dean 89–92; Kurukshetra Univ: CSIR Emer Sci. 2004–; Biotechnol. Centre: Co-ordinator 89; Univ. of Munster, Germany: Vis. Prof. 81–82.

Scientific Work: Investigated some key enzymes of the photosynthetic carbon reduction (PCR) cycle and C_4 metabolism, rates of $^{14}CO_2$ fixation in light and dark and initial products of photosynthetic $^{14}CO_2$ fixation conducted with fruiting structures of various crops; demonstrated that fruiting structures of cereals and legumes assimilate CO_2 by a mechanism different from what is known for leaves of either C_3 or C_4 plants. Hypothesized that fruit photosynthesis has an intermediate status between C_3, non-autotropic tissue and C_4/CAM photosynthesis. However, Brassica pods have been shown to behave like a typical C_3 system. Extensive studies on carbon and nitrogen metabolism of sink tissues, have helped to understand the biochemistry of grain ripening and nodule functioning in nitrogen fixation. Mechanisms for biosynthesis of starch in amyloplasts of developing wheat grains, generation of carbon skeletons for nitrogen fixation in legume nodules and biogenesis of ureides in tropical legumes have been proposed. Models depicting partitioning and utilization of carbon and nitrogen for dry matter and protein production in major Indian pulses have been constructed. Research has yielded valuable information regarding physiological and biochemical constraints which limit yield in major agricultural crops and would help the plant breeders in tailoring idiotypes for maximising photosynthetic efficiency vis-a-vis higher yield.

Memberships: Fellow: NASI 89; NAAS 93; INSA 97.

Awards & Distinctions: ICAR Hari Om Ashram Trust Award 88 • K S Bilgrami Memorial Medal 2001.

Singh, Rishi Narain

Elected: 1988
Position: CSIR Emeritus Sci., NGRI, Hyderabad
Specialization: Geophysics, Geophysical and Enviromental Modelling
Date and Place of Birth: 17 July 1943; Bajha, Uttar Pradesh
Parents: Hridai Narain Singh and Deo Kumari
Spouse and Children: Premavati; two *s*, one *d*
Address: National Geophysical Research Institute,
Council of Scientific and Industrial Research, Uppal Road, Hyderabad 500 606, India
Tel. (040) 2343 4604 (O), (040) 2715 0570 (R), Mobile: 93463 52339
email: rishiprem@hotmail.com, rnsigh@ngri.res.in

Education: BHU, Varanasi: BSc 62, MSc 64, PhD 69.

Career: Dalhousie Univ., Canada: Postdoc Fellow 70–71; Memorial Univ. of Newfoundland, Canada: Postdoc Fellow 72–73; NGRI, Hyderabad: SSA 64–68, Sci. 68–89, Dir Grade Sci. 2003–05, CSIR Emeritus Sci. 2005–; Indian Inst. of Geomagnetism, Bombay: Assoc. Prof. 77–78; C-MMACS, Bangalore: Sci.-in-Charge 96–99; Dir, NEERI, Nagpur: 99–2003.

Scientific Work: Research in quantification of geological, geophysical and environmental processes in the Indian region. These include the determinations of thermal structure/evolution and the rheological structure of the Indian continental lithosphere, a thermomechanical model of evolution of Cuddapah sedimentary basin, modelling of movement of lithosphere/asthenosphere boundary, estimation of stress state of some parts of the Indian continental lithosphere due to surface and internal loads and in-plane compression, variational approach to constrain crustal radioactivity, isostatic compensation mechanism of several Indian oceanic bathymetric features using admittance analysis and plate flexure theory, structure of the Bay of Bengal, inversion methodologies for heat flow and geomagnetic data interpretation, generation and propagation of hydromagnetic waves in the liquid core, spatio-temporal fluctuations of phreatic surfaces due to transient recharge, bioremediation models, air quality model of Vishakapatnam bowl area, prediction of air quality nonlinear time series, multimedia model for Mumbai region, genomic tools for environmental impact assessment.

Important Publications: **(1)** High moho temperature in the Indian shield (1982) *Tectonophys.* **82**, 299–306. **(2)** Thermo-mechanical structure of the southern part of the Indian shield and its relevance to precambrian basin evolution (1984) *Tectonophys.* **105**, 103–120. **(3)** Effects of random horizontal variations in the radiogenic heat source distribution on its relationship with the heat flow (1986) *J. Geophys. Res.* **91**, 397–404. **(4)** Thermal perturbation during charnockitization and granulite facies metamorphism in southern India (1995) *J. Metamorph. Geol.* **13**, 419–430. **(5)** Genomic tools in environmental impact assessment (2003) *Environ. Sci. Technol.* **37**, 356A–363A.

Memberships: Fellow: INSA 91; Indian Geophysical Union.

Awards & Distinctions: S S Bhatnagar Prize 85.

Singh, Sarva Jit

Elected: [illegible]
Position: INSA Sr Sci
Specialization: Theoretical Seismology, Applied Mathematics
Date and Place of Birth: 5 November 1939, Rawalpindi
Parents: [illegible]
Spouse and Children: Harmohinder Kaur; two *s*, one *d* (Jasjit, Paramjit, Jatinder)
Address: 22A, Navyug Adarsh Apartments, F Block, Vikas Puri, New Delhi 110 018, India
Tel: (011) 2554 [illegible] (R), Mobile: [illegible] 50454
email: [illegible]

Education: Agra Univ.: BSc 60, MSc 62; Kurukshetra Univ.: PhD 67.

Career: Kurukshetra Univ.: Tutor 62–64, Lecturer 64–69, Reader 69–76; Weizmann Inst. of Sc., Israel: Jr Postdoc Fellow 67–69, Sr Postdoc Fellow 71–72, Vis. Sci. 78, 79, 86; MIT, USA: Res. Assoc. 72–73; Maharshi Dayanand Univ., Rohtak: Prof. 76–99; CSIR Emeritus Sci. 99–2004; INSA Sr Sci. 2004–09.

Scientific Work: Worked on the seismic source theory, the excitation of body and surface waves and the normal modes of the Earth. Developed matrix method to calculate the static deformation of the Earth, which is widely used to compute the residual stress, strain and tilt fields in the Earth. Computed coseismic and postseismic deformation of the Earth caused by earthquake faulting. Showed that earthquakes are insufficient to maintain the Chandler wobble. Obtained the transfer matrix for a compressible poroelastic multilayered half-space. Studied consolidation of a poroelastic half-space possessing anisotropic permeability and compressible fluid and solid constituents by surface loads.

Important Publications: **(1)** Static deformation of a multilayered half-space by internal sources (1970) *J. Geophys. Res.* **75**, 3257–3263. **(2)** A unified approach to the representation of seismic sources (1973) *Proc.R. Soc. Lond.* **A 331**, 525–551 **(3)** *Deformation of elastic solids* (1991) Prentice-Hall, p.341. **(4)** *Seismic waves and sources* (2000) Second Edition, Dover, p.1102. **(5)** Quasi-static deformation of a multilayered poroelastic half-space by two-dimensional buried sources (2007) *Acta Mechanica* **191**, 161–179.

Memberships: Fellow, INSA 91, NASI 91 • President, Indian Mathematical Soc. 2005–06 • Chmn, Expert Group on Research in Seismology DST 97–98.

Awards & Distinctions: ISET Best Paper Award in Earthquake Engineering • Chmn, Indian National Committee for IUGG 1991–94 • Distinguished Alumni, Kurukshetra Univ. • ISET Best Paper Award in Seismology and Seismotectonics • UGC Natl Assoc. 75–80 • UGC Natl Fellow 84–86 • Distinguished Service Award Mathematical Assn of India 2000.

Singh, Tej Pal

Elected: *1994*
Position: *Distinguished Biotechnologist, AIIMS, New Delhi*
Specialization: *Structural Biology, Protein Structures, Peptide Design, Drug Discovery*
Date and Place of Birth: *20 October 1949; Moradabad, Uttar Pradesh*
Parents: *Ram Swarup Singh and Rama*
Spouse and Children: *Meera; one d*
Address: *Department of Biophysics, All India Institute of Medical Sciences, Ansari Nagar*
New Delhi 110 029, India
Tel. (011) 2658 8931 (O), (011) 2659 4547, 2651 0285 (R), Mobile: 93122 49508
email: tpsingh.aiims@gmail.com

Education: Univ. of Allahabad: BSc 68, MSc 71; IISc, Bangalore: PhD 76.

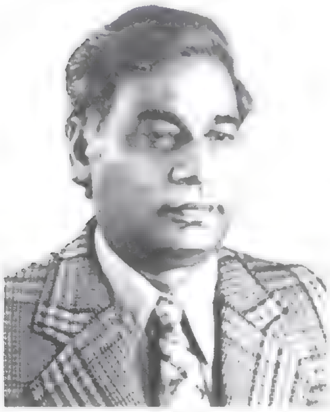
Career: Univ. of Indore: Lecturer 77–78; Max Planck Inst. of Biochem., Germany: Humboldt Fellow 78–80; Sardar Patel Univ., Gujarat: Reader 80–83; Inst. of Crystallography, Germany: Prof. 82; AIIMS, New Delhi, Dept of Biophysics: Addl Prof. 84–85, Prof. and Head 86–2006; Disting. Biotechnologist 2006–; European Molecular Biology Lab., Germany: Vis. Prof. 91–93.

Scientific Work: Worked on structures of drugs, low temperature studies on serine proteases, enzyme-substrate intermediates, structures of proteins and peptide design. Based on peptide design, given general rules of peptide design using alpha, beta-dehydro-residues. Based on studies on the complexes of proteinase K and designed peptides, has characterized the recognition site of proteinase K fully and discovered an alternate recognition site in this protein. Recently obtained significant results on lactotransferrins, its functional fragments, lactoperoxidase, turmerin and binary and ternary complexes of a bifunctional inhibitor from rag.

Memberships: Fellow: NASI 98; INSA 2001; TWAS 2003 • Member: Max-Planck Soc., Germany; Indian Biophysics Soc.

Awards & Distinctions: Max-Planck Medal 79 • Canadian Intl Development Agency Award 91.

Singh, Udai Narain*



Elected: 1975
Specialization: Biophysics; Molecular Biology; Neurobiology
Date of Birth: 1 January 1931
Last Address: Department of Biophysics, University of Delhi, South Campus,
Benito Juarez Road, New Delhi 110 021, India
***Deceased:** 31 December 2006

Education: Univ. of Chicago, USA: PhD.

Career: Calcutta Univ.: 47–51; BHU, Varanasi: 52–54; IACS, Calcutta: 54–56; Univ. of Pennsylvania, USA: 56–57; Univ. of Chicago, USA: 57–63; McGill Montreal General Hospital, Canada: 63–65; TIFR, Bombay: 66–86; Univ. of Delhi: 86.

Scientific Work: Among early contributions was the development and application of a quantitative analytic method for the evaluation of isotope incorporation data in animal cells. Used this approach to demonstrate the precursor product relationship between nuclear and cytoplasmic RNA. At TIFR worked on different aspects of synthesis of RNA and protein. Developed a stochastic model of protein synthesis on labile templates which provides a framework for co-ordination of transcription, translation, and degradation of messenger RNA in microorganisms. This model provides the rational basis for a variety of physiological phenomena such as the size distribution of polyribosomes and the rapidly labelled RNA, distribution of nascent peptides, and the temporal relationship between the synthesis of enzymes and its mRNA. Along with the group investigated the biogenesis of ribosomes in *E. coli* using a quantitative immuno-chemical technique suggesting that the ribosomal proteins in *E. coli* are synthesized in a coordinate manner and the free proteins in the pool function as a positive control element in the synthesis of ribosomal RNA. Shown that the genes for 16 S and 23 S ribosomal RNA are contiguous and involve a common invitation site.

Singh, Vinod Kumar

Elected: 2005
Position: Umang Gupta Chair Prof., Dir, IISER Bhopal
Specialization: Synthetic Organic Chemistry
Date and Place of Birth: 9 September 1959; Azamgarh, Uttar Pradesh
Parents: Udai Bhan Singh and Sundari Devi
Spouse and Children: Anjali h; one *s*, one *d* (Divyanshu, Dootika)
Address: Indian Institute of Science Education and Research, Bhopal Transit Campus: ITI (Gas Rahat) Building, Govindpura, Bhopal 462 023, India
Tel. (0755) 260 1096 (O), (0755) 268 8008 (R), Mobile: 99811 44455
email: vinodks@iitk.ac.in

Education: Univ. of Gorakhpur: BSc 78; BHU, Varanasi: MSc 80; M S Univ., Baroda: PhD 86.

Career: Neurogen Corpn, USA: Sr Sci. 90; IIT Kanpur: Asst Prof. 90–97, Assoc. Prof. 97–2001, Prof. 2001–08; IISER Bhopal: Dir 2008–.

Scientific Work: Has contributed significantly towards development of enantioselective methods in organic synthesis. Designed several new chiral ligands/catalysts for enantioselective deprotonation of epoxides, allylic oxidation of olefins, propargyl addition to carbonyls, carbonyl-ene reaction, Friedel–Crafts reaction, etc. Has contributed a lot to the area of catalytic asymmetric organocatalytic aldol reaction. Completed total synthesis of several biologically important natural products such as (+)-dihydrokawainol, (+)-boronolides, (-)-muricatacin, (–)-acaterin, (–)- and (+)-lentiginosine, (+)-diplodialide, etc.

Important Publications: **(1)** Design, synthesis, and application of chiral nonracemic lithium amide bases in enantioselective deprotonation of epoxides (1996) *J. Org. Chem.* **61**, 6108. **(2)** Asymmetric Kharasch reaction: Catalytic enantioselective allylic oxidation of olefins using chiral pyridine bis(diphenyloxazoline) – copper complexes and tert-butyl perbenzoate (1998) *J. Org. Chem.* **63**, 2961. **(3)** Total synthesis of (–)-and (+)-lentiginosine (2003) *J. Org. Chem.* **67**, 4630. **(4)** Total synthesis of (+)-boronolide, (+)-deacetylboronolide, and (+)-dideacetylboronolide (2004) *J. Org. Chem.* **68**, 4039. **(5)** A facile one step synthesis of alkoxy lactone via sequential lactonization and 1, 4-addition of alkoxide β Group: Total synthesis of all the stereoisomers of dihydrokawain-5-ol (2004) *J. Org. Chem.* **69** 2425.

Memberships: Fellow: NASI 2004; Am. Chem. Soc.; R. Soc. Chem.; Chem. Res. Soc. of India; Intl Chem. Soc.

Awards & Distinctions: Swarnajayanti Fellowship 98 • Goyal Prize for Young Scientists 2002 • S S Bhatnagar Prize 2004 • Vigyan Ratna Samman of U P Govt 2006.

Singh, Virendra

Elected: 1970
Specialization: Theoretical Physics; Quantum Mechanics; History and Philosophy of Science
Date and Place of Birth: 8 June 1938; Bijnore, Uttar Pradesh
Parents: Jagdish Saran and Somati Devi
Spouse and Children: Saroj; two s (Varun, Dinkar)
Address: 51, New Cosmos, Juhu-Versova Link Road, Andheri (West), Mumbai 400 053, India
Tel. (022) 2671 6681 (R)
email: vsingh1937@gmail.com; URL: http://theory.tifr.res.in/~vsingh

Education: Agra University (Meerut College): BSc, 55, MSc 57; Univ. of California, Berkeley: PhD 62.

Career: TIFR, Bombay: Res. Asst 57–63, Reader 64–66, Assoc. Prof. 66–69, Prof. 70–80, Sr Prof. 81–86, Dir 87–97, Prof. of Eminence 90–2003, INSA C V Raman Res. Prof. 2003–08, Hon. Prof. 2008-11. Lawrence Radiation Lab., USA: Res. Assoc. 59–61; Caltech, USA: Res. Fellow 62–63; Inst. for Advanced Study, Princeton, USA: Member 63–64; Rockefeller Univ. New york USA: Vis. Assoc. Prof. 66–67, Vis. Full Prof. 71–72.

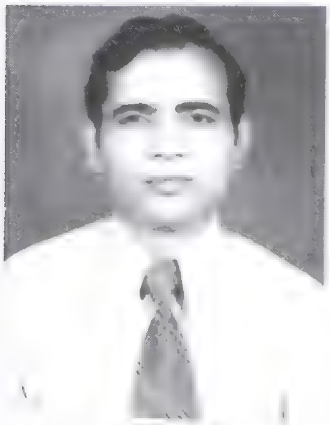
Scientific Work: Contributions extend over a wide range from the high energy phenomenology to deepest conceptual ideas in quantum mechanics. These include Regge analysis of Coulomb and pion-nucleon scattering amplitudes and the Reggesation in quantum field theory, Gupta–Singh sum rules for decimet decay in SU(3), and Beg–Singh mass formula in SU(6) for baryons. In current algebra amplitudes, discovered a fixed pole, and new low-energy theorems for Compton scattering. Revived the field of high energy theorems with S M Roy. Work with Biswas and Datta was the beginning of the field of study of 'quasi-solvable' models in potential theory. The existence of new viable boundary conditions was suggested in the work on string theorywith S M Roy. In the work with S M Roy on Foundations of Quantum Mechanics, investigated violation of Einstein–Bell locality, a new causal quantum mechanics and Bell's inequalities on joint probability distributions in phase space.

Important Publications: **(1)** Elementary particles of conventional field theory as Regge Poles (1964) *Phys. Rev.* **133**, 161–174. **(2)** Splittings of spin supermultiplets (1964) *Phys. Rev. Lett.* **13**, 418–421. **(3)** Upper bounds on particles-antiparticle total crosssection differences at high energies (1970) *Phys. Lett.* **32B**, 50–54. **(4)** The anharmonic oscillators and the analytic theory of continued fractions (1978) *Phys. Rev.* **D18**, 1901–1908. **(5)** Tests of signal locality and Einstein-bell locality for multiparticle systems (1971) *Phys. Rev. Lett.* **67**, 2761-2764.

Memberships: Fellow: INSA 75; NASI 89; TWAS 98 • President: Indian Phys. Assn 85–86.

Awards & Distinctions: S S Bhatnagar Prize 73 • Meghnad Saha Award 79 • Goyal Prize 95 • Saha Lecture Award 96 • Raman Centenary Medal 96.

Singh, Yashwant



Elected: 1991
Position: Prof. Emeritus and Ramanna Fellow, BHU, Varanasi
Specialization: Condensed Matter Physics; Statistical Mechanics; Polymers
Date and Place of Birth: 28 July 1944; Jaunpur, Uttar Pradesh
Parents: Ram K Singh and Malti
Spouse and Children: Vidyawati; one *s*, one *d* (Raghuvansh, Sangeeta)
Address: Department of Physics, Banaras Hindu University, Varanasi 221 005, India
Tel. (0542) 230 7308, (0542) 670 1562, (0542) 231 6119 (R), Mobile: 94159 91459
email: ysingh@bhu.ac.in

Education: Univ. of Gorakhpur: BSc 62, MSc 64; Univ. of Calcutta: DPhil 69.

Career: BHU, Dept of Phys: Lecturer 70–76, Reader 76–85, Prof. 85–2007, Prof. Emer. and Ramanna Fellow 2007–; IBM Res. Lab., USA: Postdoc Fellow 76–77; Univ. of Illinois, USA: Vis. Faculty Member 82–84; Univ. of Guelph, Canada: Vis. Prof. 87–88.

Scientific Work: Has contributed to the understanding of simple as well as complex fluids. Work spans the area of classical and semi-classical fluids, interfaces, electron localization, liquid crystals, polymers and biopolymers. Notable contributions are the effect of multipolar correlations on properties of molecular liquids; quantum corrections to pair correlation functions and thermodynamic properties of liquids; theory of the liquid-vapour and liquid-solid interfaces; theory for solvated electron based on the path integral formulation which provides a treatment accurate to all order in coupling strength and considers deformation of medium; the glassy state as a metastable phase, demonstrated by explicit statistical mechanical calculations using density functional theory; original contributions in the area of liquid crystals e.g. density-functional theory of flexoelectricity, of curvature elasticity, freezing of molecular liquids to liquid crystalline phases, etc.; derivation (using renormalized group transformation) of the exact values of critical exponents for polymers on fractal lattices for transitions involving collapse, segregation and entanglement, surface adsorption, theory for pair correlation functions of ordered phases, etc.

Memberships: Fellow: INSA 2006.

Important Publications: **(1)** Excess electrons in simple fluids I. General equilibrium theory of classical hard spheres solvents (1984) *J. Chem. Phys.* **81**, 1975. **(2)** The hard-sphere glass and the density functional theory of aperiodic crystals (1985) *Phys. Rev. Lett.* **54**, 1059. **(3)** Density functional theory of freezing and properties of the ordered phase (1991) *Phys. Rep.*, **207**, 351–444. **(4)** Statistical mechanics of coil-hairpin transition in a single stranded DNA oligomer (2005) *Euro. Phys. Lett.* **70**, 15. **(5)** Pair correlation functional in nematics: Free-energy functional and isotropic-nematic transition (2006) *Phys. Rev. Lett.* **97**, 17780.

Singhi, Navin Kumar Madhavprasad

Elected: 1986
Position: Prof., TIFR, Mumbai
Specialization: Discrete Mathematics; Designs; Finite Geometries
Date and Place of Birth: 19 March 1949; Indore, Madhya Pradesh
Spouse and Children: Sudha; two *s*, one *d* (Nikhil, Nidhi)
Address: School of Mathematics, Tata Institute of Fundamental Research,
Homi Bhabha Road, Mumbai 400 005, India
Tel. (022) 2278 2590 (O), (022) 2280 4714 (R)
email: singhi@math.tifr.res.in

Education: Univ. of Bombay: BSc 68, MSc 70, PhD 74.

Career: Colarado State Univ., USA: Postdoc Fellow 74–75; TIFR, Bombay, School of Mathematics: Res. Asst. Prof. 70–; Univ. of Bombay: Prof. Maths; Ohio State Univ.: Vis. Asst Prof. 75–76; Mehta Res. Inst., Allahabad: Vis. Sci 83–84; Progressive Sci. Information Pvt. Ltd: Chmn 95–2003; Consortium for Information and Communications Technol. Chmn 96–2002.

Scientific Work: Included among the research papers, several of which have been considered a landmark in the field are results on embedding of quasiresidual designs in the symmetric designs with λ design conjecture, toroidal monoids and Cohen Macalay rings of t-designs, weak and strong delta systems, existence conjecture for t-designs on sets and vector spaces and on sharply edge transitive graphs and on semiadditive rings of projective planes.

Important Publications: **(1)** Edge regular multigraphs and partial geometric designs (1973) *Proc. Int. Colloquim in Combinatorial Theory, Rome* (1976) *Academia National Die Lincei* 49–81. **(2)** On the λ-design conjecture (1976) *Utilitas Mathematica* **8**, 398–403. **(3)** Combinatorial problems on subsets and their intersections (1978) *Suppl. Studies, Advances in Maths* **1**, 259–265. **(4)** On the existence of t-designs with large v and large λ (1988) *SIAM J. Discrete Methods* 98–104. **(5)** Tags On subsets (2006) *Discrete Mathematics* **306**, 1610–1623.

Memberships: Fellow: Maharashtra Acad. of Sci. 85; INSA 89.

Awards & Distinctions: iNSA Young Scientist Award 77 • S S Bhatnagar Award 93 • Nokia Research Award 2004.

Singhvi, Ashok Kumar

Elected: 2000
Position: Outstanding Sci. and Dean, PRL, Ahmedabad
Specialization: Quaternary Geochronology; Earth Surface Processes; Past Climates; Tectonics; Radiation Effects in Minerals
Date and Place of Birth: 2 November 1950; Jodhpur, Rajasthan
Parents: Ashok Mal Singhvi and Uma Devi
Spouse and Children: Anita; one *s*, one *d* (Aalok, Aakanksha)
Address: Planetary & Geosciences Division, Physical Research Laboratory,
Navrangpura, Ahmedabad 380 009, India
Tel. (079) 2631 4366, 2631 4370 (O), (079) 2685 5831 (R)
email: singhvi@prl.res.in, www.prlres.in/~singhvi

Education: Univ. of Jodhpur: BSc 68, MSc 70, PhD 76.

Career: DAE: SRF 72–76; PRL: Vis. Sci. 76–77, Res. Asst 77–81, Fellow 81–88, Assoc. Prof. 88–96, Prof. 96–2004, Sr Prof. 2004–08, Outstanding Sci. 2008–, Dean 2007–.

Scientific Work: Developed luminescence dating in India and has made fundamental methodological contributions ranging from analysis protocols to radiation effects in solids, and from application to drylands and sesimogenic region. Provided a chronometry for a major part of the Indian surface and has additionally worked in Indian, Arabian, Saharan, South African and American deserts. Helped development of 9 laboratories in India and has provided new insights into aspects of land–sea correlations.

Important Publications: **(1)** The aeolian sedimentation record of the Thar Desert (2004) *Proc. Indian. Acad. Sci., Earth Planet. Sci.* **113**, 371–403. **(2)** Towards quantifying beta microdosimetric effects in single grain quartz dose distribution, *Radiat. Measurements* **41**, 1032–1039. **(3)** Timing of recent out-of-sequence active deformation in the frontal Himalayan wedge: Insights from the Darjiling sub-Himalaya, India, *Geology* **35**, 999–1002. **(4)** Paleoecology reconstruction from trapped gases from fulgurite from the late pleistocene of the Libyan Desert (2007) *Geology* **35**, 117–120. **(5)** Unusal radiation dose dependent EPR line at $g_{.ff} = 2.54$ in feldspars: Possible evidence of $Fe^{3+}O^{2}$ $\leftrightarrow$ $Fe^{2+}O^{-}$ and exchange coupled Fe^{3+}-Fe^{2+}-nO^{-}, *J. Phys. Condens. Matter* **20**, 2, 5224.

Memberships: Fellow: INSA 2000; NASI 2001; TWAS 2004 • President: Indian Geophysical Union; Geological Soc. of India 2008 • Lifetime Honorary Fellow: Geological Soc. of London, UK • Ford Foundation Fellow, USA 77 • AvHumboldt Fellow • Germany 84–86.

Awards & Distinctions: Indian Geophysical Union, Krishnan Gold Medal 88 • National Mineral Award 2003 • Geological Soc. of America Farouk El-Baz award 2004 • RD University, Jhansi, Roll of Honour 2004 • Indian Geophysical Union Decennial Award 2006 • INSA K Naha Medal 2006 • Kurukshetra University Goyal Prize 2006.

Sinha, Akhoury Purnendu Bhusan

Elected: 1974
Position: Vis. Sci., Morris Res Inc., USA
Specialization: Solid State Materials
Date and Place of Birth: 27 December 1928; Buxar, Bihar
Parents: Akhoury Skanda Narain Sinha and Suraj Bansi Devi
Spouse and Children: Snehlata; three *s*
Address: 1918, University Avenue, Berkeley, California 94704, USA
Tel. (+1-510) 525 7263 (R)

Education: Patna Univ.: BSc 48, MSc 50; Univ. of London, UK: PhD 55.

Career: NCL, Pune: Jr Sci. Offr, Sr Sci. Offr, Asst Dir, Sci. (Dir Gr) 55–88, Head Phys Chem. Dn 84–88; Purdue Univ., USA: Postdoc Res. 74; Univ. of Poona: Head, Phys. Chem. Dn 84–88; Prof. of Phys. Chem. 85–90; Morris Res. Inc., Calif., USA: Vis. Sci. 90–.

Scientific Work: Synthesized novel transition metal compounds, studied electron-lattice interactions leading to crystal distortion and metal-insulator transitions; electron transport in low-mobility semiconductors; switching and memory effects and magnetic ordering. Developed useful solid-state products, e.g. thermistors, photocells, magnets and photovoltaic materials.

Memberships: Maharashtra Acad. of Sci. 77; Fellow: INSA 78.

Awards & Distinctions: S S Bhatnagar Prize 72 • NRDC Award 78.

Sinha, Bikash Chandra

Elected: 2004
Position: Dir, Saha Inst. of Nuclear Physics, Kolkata
Specialization: Nuclear Physics; High Energy Physics; Quark Gluon Plasm; Early Universe Cosmology
Date and Place of Birth: 16 June 1945; Kolkata, West Bengal
Parents: Brindaban Chandra Sinha and Uma
Spouse and Children: Aparna; one *s*, one *d*
Address: Saha Institute of Nuclear Physics, 1/AF, Bidhan Nagar, Kolkata 700 064, India
Tel. (033) 2337 0032, (033) 2337 0313 (O), (033) 2475 2206 (R)
email: bikash.sinha@saha.ac.in

Education: Univ. of Calcutta: BSc Hons 64; Cambridge Univ.: BA 67, MA 68, London Univ.: PhD 70, DSc 81.

Career: King's College, London: Res. Student 67–70, SRF 70–76; BARC Kolkata: Sci. Offr 76–83, Head of Sec. 84–85, Head of Dn 86–87; VECC, Kolkata: Dir 87–; Saha Inst. of Nuclear Phys.: Dir 92–.

Scientific Work: Has done pioneering work on single particle and heavy ion optical potential. For the first time, calculated the response of the nucleus to a single particle field of the projectile nucleus. Original work in the field of quark-gluon plasma is widely recognized internationally, in particular, on the photons and dileptons as signals. Boost non-invariant hydrodynamic flow, very early universe quark hadron phase transition, mass shift of the hadrons in medium and chiral symmetry are some of the major contributions. The importance of these contributions has resulted in a set of experiments at CERN, SPS, BNL RHIC and CERN LHC – the purpose of which is to look for photons as possible signals of quark-gluon plasma. Also responsible for initiating a large scale participation of Indian scientists in experiments at CERN SPC, BNL RHIC and CERN LHC by leading a team which designed, fabricated, installed and made valuable observations, using photon multiplicity detector.

Memberships: Fellow: INSA 89; NASI 93; New York Acad. of Sci. 97; TWAS 2001.

Awards & Distinctions: S N Bose Birth Centenary Award 94 • Padma Shri 2001 • Raja Ramanna Prize 2001 • IPA P A Pandya Endowment Lecture Award 2001 • Rais Ahmed Memorial Lecturer Award 2001 • R D Birla Award for Excellence in Physics 2002 • Natl Acad. of Sci., Ukraine, Honorius Doctorate in Physics 2005 • Alexander von Humboldt Foundation, Germany, Humboldt Research Award 2005 • NASI Prof. Meghnad Saha Memorial Lecture Award 2007.

Sinha, Kalyan Bidhan

Elected: 1986
Position: Bhatnagar Fellow, Hon. Prof., JNCASR, Bangalore
Specialization: Spectral Theory of Operators; Non-Commutative Geometry; Stochastic Processes
Date and Place of Birth: 3 June 1944; Midnapore, West Bengal
Parents: Bhubhan C and Nibedita
Spouse and Children: Akhila; one *s*, one *d*
Address: Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur, Bangalore 560 064, India
Tel. (080) 2208 2754 (O), (080) 2366 1305 (R), Mobile: 99001 44612
email: kbs@jncasr.ac.in

Education: Univ. of Calcutta: BSc 63; Univ. of Delhi: MSc 65; Univ. of Rochester, USA: PhD.

Career: Univ. of Rochester, USA: Res. Assoc. 69; Univ. of Geneva, Switzerland: Res. Assoc. 70–78; IIT, Madras: Res. Assoc. Instructor 72–74; ISI, Kolkata: Prof. 79–98, Distinguished Sci. 98–2006, Dir 2000–05; ISI, Delhi: Disting. Sci. 2005–06; JNCASR, Bangalore: Hon. Prof. 2006–, Dean Faculty Affairs 2006–; Univ. of Colorado, USA: Prof. 80; Univ. of Manitoba, Canada: Prof. 84; Univ. of Texas: Prof. 85.

Scientific Work: Developed Hilbert space methods to study mathematically the spectral theory of Schrodinger operations. These methods applied to various systems of physical interest to obtain a unitary S-matrix. Studied the decay of unstable systems using the methods of scattering theory and reported important spectral results and derived some decay laws. Presuming the principles of quantum mechanics as a model of noncommutative probability theory, studied several noncommutative processes and obtained important results like representation of martingales and strong Markov property with respect to a quantum stop time.

Memberships: Fellow: INSA 94; TWAS 2002 • Member: International Assn of Mathematical Physicists; Indian Mathematical Soc.

Awards & Distinctions: Jagdish Chandra Bose Sc. Talent Award 60 • Ulam Chair Prof., Univ. of Colorado 80 • S S Bhatnagar Prize 88 • C V Raman Centenary Award 89 • Ganesh Prasad Lecture of IMS 95 • ISCA Platinum Jubilee Lecture 96 • ISCA Mahalanobis Medal 2004.

Sinha, Krityunjai Prasad

Elected: 1971
Position: INSA Hon Sci., IISc, Bangalore
Specialization: Solid State and Theoretical Physics; Complex Systems; Non-Equilibrium Quantum Coupling
Date and Place of Birth: 5 July 1929; Akhtiarpore, Bihar
Parents: Maheshwari Prasad Sinha and Tara
Spouse and Children: Kanti; two *s*, two *d*
Address: Sterling Residency, D-105, RMV II Stage, Dollars Colony, Bangalore 560 094, India
Tel. (080) 2351 8553 (R)
email: kpsinha@gmail.com, kpsin03@yahoo.com

Education: Allahabad Univ.: BSc 48, MSc 50; Univ. of Poona: PhD 56; Univ. of Bristol, UK: PhD 59.

Career: NCL, Pune: Sci. 51–68; H H Wills Physics Lab., UK: Postdoc Res. 59; Bell Lab., USA: Sr Sci. 68–70; IISc, Dept of Phys. and Maths and Centre for Theoretical Studies: Sr Prof. 70–89, Dept of Mathematics: Chmn 71–73, 75–77, Dn of Phys and Maths and Centre for Theoretical Studies: Chmn 72–73, 81–87, MSIL Prof. 86–88, INSA Sr Sci. 90–93, CSIR Disting Sci. 93–96, CSIR Emeritus Prof. 94, INSA Hon. Sci. 2006–; ICTP, Italy: Vis. Prof. 70, 72, 76, 83; H H Wills Lab., Bristol, and Cavendish Lab., UK: Vis. Prof. 77–78; Univ. of Grenoble, France: Vis. Prof. 83–84; Univ. of Goteberg, Sweden: Vis. Prof. 86; Univ. of Western Ontario, Canada: Vis. Prof. 87–88; NEHU, Shillong, Inst. of Res. on Complex Systems: Dir 91–94; JNCASR, Bangalore: Sr Sci. 96–98; MIT, Cambridge, USA: Vis. Sci. 2000–03.

Scientific Work: Suggested a novel electronic mechanism (involving lochons-local charged bosons) for high-temperature superconductors. Predicted photoinduced superconductivity, which was recently confirmed in cuprates. Developed superstrong gravity at extreme density, phase transition in the early universe, and non-singular cosmological models, dual nature of the Ricci scalar beyond a high energy regime in the early universe and its role in quantum gravity. The quantum theory of reaction mechanism in solid state; the discovery and the first statistical theory of cooperative Jahn–Teller effect induced structural phase transition and the origin of ferroelectricity; mechanisms of exchange interaction of magnetic solids; spin–phonon, phonon–magnon and electromagnon interactions and relaxation processes in para-, ferro-, ferri- and antiferro-magnetic solids; electro–phonon interaction and transport properties of semiconductors; the origin of giant magnetic moments and resistance minimum phenomenon in dilute alloys; novel electronic pairing mechanism involving local charges bosons or biexcitons for high temparature superconductivity.

Important Publications: **(1)** Crystal distortion in ferrite-manganites (1957) *Proc. R. Soc. London* **A242**, 28. **(2)** Electron-phonon coupling in dielectrics (1966) *Solids* **27**, 1837. **(3)** The role of empty orbitals in superexchange interaction (1961) *Indian J. Physics* **35**, 484; (1962) *Phys. Rev.* **127**, 423; (1963) **130**, 939. **(4)** Impurity states and resistances minimum indilute alloys (1967) *Proc. Phys. Soc. (London)* **90**, 445. **(5)** On the possibility of photoinduced superconductivity (1968) *Phys. Rev.* **174**, 482. **(6)** Mechanism of HTSC (1998) *Mod. Phys. Lett.* **B12**, 805.

Memberships: Fellow: INSA 79; NASI 82; American Physical Soc.; New York Acad. of Sci.; Acad. of Commonwealth, UK • Member of Board: Sci. for Humanity Trust, Bangalore 2005–.

Awards & Distinctions: S S Bhatnagar Prize 74 • Award in Physics, Switzerland 75 • Distinguished Alumni, H H Wills Physics Laboratory, Univ. of Bristol 77; Platinum Jubilee Distinguished Alumni Award, IISc 84.

Sinha, Pratima

Elected: 2000
Position: Prof., Bose Inst., Kolkata
Specialization: Molecular Biology; Molecular Genetics of Yeast
Date and Place of Birth: 14 November 1952; Delhi
Parents: R N Sinha and C A Sinha
Spouse and Children: Gautam Bhattacharyya; one *s*
Address: Department of Biochemistry, Bose Institute, P-1/12, CIT Scheme, VII M, Kolkata 700 054, India
Tel. (033) 2355 0256 (O), (033) 24626971 (R), Mobile: 98314 62939
email: pratima@boseinst.ernet.in

Education: Delhi Univ: BSc Hons 72, MSc 74; Univ. of Bombay PhD 79.

Career: Molecular Biology Unit, TIFR: Postdoc Fellow 79–80; Dept of Genetics, Univ. of Washington, Seattle, USA: Postdoc Fellow 81; Biochem. Dept, Cornell Univ.: Postdoc Fellow 81–84; IMTECH, Chandigarh: Sci. 84–86; IICB, Kolkata: Sci. 86–87; Bose Inst., Dept of Biochem.: Lecturer 87–91, Reader 91–97, Prof. 97–.

Scientific Work: High-fidelity transmission of genetic material from parent cell to daughter cells requires accurate replication and segregation of chromosomes. Cells having unreplicated, partially replicated or damaged DNA, if allowed to enter mitosis, would generate aneuoploidy and genetic instability. Proper segregation of chromosomes also demands that sister-chromatid cohesion is established in S-phase. Defects in these processes can lead to chromosome loss, generation of aneuploidy and consequent genome instability that has been linked to cancer. Cells have devised safety mechanisms, the checkpoint machinery, which can sense defects at different points in the cell cycle and transmit signals to its components that either temporarily halt the progression of the cycle till the defect is repaired, or cause apoptosis. Working with mcm (minichromosome maintenance) mutants of the budding yeast which affect chromosome transmission in this organism. Analyses of these mutants have identified proteins required for the initiation of DNA replication, centromere structure and function, sister-chromatid cohesion and checkpoint machinery.

Important Publications: **(1)** Mutants of *S. cerevisiae* defective in the maintenance of minichromosomes (1984) *Genetics* **106**, 365–385. **(2)** The mcm2 mutation of yeast affects replication rather than segregation or amplification of the two micron plasmid of yeast (1992) *J. Mol. Biol.* **224**, 545–558. **(3)** MCM21 and MCM22, two novel genes of the yeast *Saccharomyces cerevisiae* are required for chromosome transmission (1999) *Mol. Microbiol.* **31**, 349–360. **(4)** The Iml3 protein of the budding yeast is required for the prevention of precocious sister chromatid separation in meiosis I and for sister chromatid disjunction in meiosis II (2004) *Curr. Genet.* **46**, 82–91. **(5)** The budding yeast protein Chl1p has a role in transcriptional silencing, rDNA recombination, and aging (2005) *BBRC* **337**, 167–172.

Memberships: Fellow: NASI 98 • Member: Guha Res. Conf.

Awards & Distinctions: Natl Sci. Talent Scholar 69–74 • Stree Shakti Science Samman 2001.

Sinha, Somdatta

Elected: 1999
Position: Sci., CCMB, Hyderabad
Specialization: Theoretical Biology; Complex Systems in Biology; Nonlinear Dynamics; Computational Biology
Date and Place of Birth: 14 October 1951; Kolkata
Parents: P B Sinha and Archana
Address: Centre for Cellular & Molecular Biology, Uppal Road, Hyderabad 500 007, India
Tel. (040) 2719 2588, (040) 2719 2786 (O), (040) 6529 2588 (R), Mobile: 98481 49991
email: sinha@ccmb.res.in, somdattasinha@gmail.com; URL: http://www.ccmb.res.in

Education: Visva Bharathi, Santiniketan: BSc Hons 73, MSc 75; JNU, New Delhi: MPhil 77, PhD 82.

Career: CCMB, Hyderabad: Sci. 83–. Group Leader, Mathematical & Computational Biology Group.

Scientific Work: Area of study is theoretical biology, nonlinear dynamics and complex systems with a view to understand the logic and design of underlying biological processes. The primary interest is to study the evolution and maintenance of spatiotemporal organization in biological systems spanning multiple spatiotemporal scale- from ecological to genetic. Studied mechanisms of self-organization in collective dynamics in spatially extended systems (e.g. metapopulation, excitable tissues, etc.), and the adaptive role of biochemical nonlinearities present in biochemical pathways. Current work involves analysing epidemiological data of infectious diseases, study of host–parasite evolution using genomic data and computational modelling, and using graph theory to understand macroscopic properties of intracellular networks. Interested in science education and co-authored several science text books of NCERT.

Important Publications: **(1)** Delay-induced transient increase and heterogeneity in gene expression in negatively auto-regulated gene circuits. *PLoS ONE* **3**, 8, e2972, 0002972. **(2)** Assortative mixing in protein contact networks and protein folding kinetics (2007) *Bioinformatics*. **(3)** Global and local control of spatiotemporal chaos in coupled map lattices (1998) *Phys. Rev. Lett.* **81**, 1401–1404. **(4)** Unusual dynamics of extinction in a simple ecological model (1996) *Proc. Natl. Acad. Sci. (USA)* **93**, 1504–1508. **(5)** Perturbations in morphogen gradients induce budding in hydra (1992) *Develop. Biol.* **154**, 218–222. **(6)** A theoretical study of the tryptophan operon: Application in microbial technology (1988) *Biotech. Bioeng.* **31**, 117–125.

Memberships: Fellow: NASI 96; INSA 2009 • Member: Soc. for Mathematical Biology, USA; Soc. for Industrial and Applied Maths, USA.

Awards & Distinctions: INSA–Royal Soc., London Exchange Programme 86–87 • Raman Research Fellowship 99 • Fellow of Wissenschaftskolleg zu Berlin, Germany 2000–01 • Sr Intl Fellow of the Santa Fe Inst., NM, USA 2008–10.

Sinha, Subrata

Elected: 2003
Position: Prof., AIIMS, New Delhi
Specialization: Molecular Oncology; Immunology
Date and Place of Birth: 4 January 1958; Lucknow, Uttar Pradesh
Parents: Jyotir Moy Sinha and Sukumari
Spouse and Children: Savitri Das; two *s*
Address: Department of Biochemistry, All India Institute of Medical Sciences, Ansari Nagar,
New Delhi 110 029, India
Tel. (011) 2659 3314 (O), (011) 2696 6586 (R), Mobile: 98119 01376
email: sub_sinha2004@yahoo.co.in

Education: AIIMS: MBBS 80, MD 83; MRC, UK: PhD 89.

Career: ICMR: Jr Resident 80–83, Res. Offr 86–88; MRC Toxicology Unit, Carshalton, UK: Smith & Nephew Fellow 84–86; AIIMS: Asst Prof. 88–92, Assoc. Prof. 92–96, Addl Prof. 96–98, Prof. 98–.

Scientific Work: Identified a tumour suppressor locus that is altered in high grade human glial tumours, and is also linked to highly proliferative tumours, within a particular tumour grade. Also shown the possibility of different chemotherapeutic strategies that are more effective in p53 mutated tumours as compared to those with a wild type p53, and vice versa. Able to demonstrate the validity of the mutator hypothesis in primary human glial tumours, and show that intra-tumour genetic heterogeneity was more in low grade tumours, as compared to a higher grade, especially if studied at those loci that were not biased for generating an aggressive phenotype. Also generated recombinant human and humanized mouse antibodies that are potentially therapeutic, against the Hepatitis B virus and against the oncoplacental antigen, the placental isozyme of alkaline phosphatase. Working on the determinants of aggressiveness and progression in human glial tumours. Identified a new tumour suppressor locus on the short arm of chromosome 17 that is altered in high-grade glial tumours. This led to the identification of a molecular marker for phenotypic heterogeneity within a histological grade. Studies on genomic instability have added new dimensions to this phenomenon by novel assays and by showing the role of recombinogenic sequences in tumourigenesis. These studies have also provided experimental evidence in favour of the mutator hypothesis. Has also used phage display technology to generate recombinant antibodies to biochemically and immunologically relevant epitopes of the onco-foetal antigen, the placental isozyme of alkaline phosphatase for basic biochemical studies and also for possible use in tumour therapeutics.

Important Publications: **(1)** Clonal mutations in primary human glial tumours: evidence in support of the mutator hypothesis (2007) *BMC Cancer* **7**, 190. **(2)** Identification and functional characterization of a novel unspliced transcript variant of HIC-1 in human cancer cells exposed to adverse growth conditions (2006) *Cancer Res* **66**, 10466–77. **(3)** Characterization and molecular modelling of a highly stable anti hepatitis B surface antigen scFv (2003) *Mol. Immunol.* **40**, 617–631. **(4)** Loss of heterozygosity of a locus on 17p133, independent of p53, is associated with higher grades of astrocytic tumours (1997) *Oncogene* **15**, 871–874. **(5)** Infrequent alteration of the c-myc gene in human glial tumours associated with increased number of c-myc positive cells (1995) *Oncogene* **11**, 2711–2714.

Memberships: Fellow: NASI 2005; INSA 2007; Indian Acad. of Stress Sci. • Member: Guha Res. Conf.

Awards & Distinctions: NCERT Sci. Talent Scholar 74 • Dorabji Tata Prize 76 • ICMR Talent Search Scheme 81–83 • Swarnajayanthi Fellowship 98 • Kodalivimad Oration of the Assoc. of Med. Biochemists in India.

Sinha, Suresh Kumar*

Elected: 1983
Specialization: Plant Physiology; Biochemistry
Date and Place of Birth: 18 July 1934; Bulandshahr, Uttar Pradesh
Parents: Ram Narain Lal Sinha and Har Devi
Spouse and Children: Shyam Kumari; three *d*
Last Address: Indian Agricultural Research Institute, New Delhi 110 012, India
***Deceased:** 17 March 2002

Education: Agra Univ.: BSc 55, MSc 57, PhD 62; Univ. of Alberta, Canada: PhD 64; UP Univ. of Agri. Sci. & Technol., Pantnagar: DSc hc 90.

Career: DAV College, Kanpur: Lecturer in Botany 57–62; Central Tuber Crops Res. Inst., Trivandrum: Plant Physiologist 66–69; FAO: Consultant 76; Univ. of Adelaide, Australia, Waite Agri. Res. Inst.: Alf Hannaford Fellow 76–77; IARI, New Delhi: Plant Physiologist 69–72, Sr Plant Physiologist 72–77, Prof. of Eminence 78–91, Dir 91–94, ICAR Natl Prof. 95–99.

Scientific Work: Studied glycine-serine interconversion and splitting of glycine to provide C2 of glycine, which can become C3 of serine; cynogenic glucosides as determinants of the quality of cassava (tapioca), and mechanism of tuberization in cassava; hypothesis proposed by the group explained that overdominance in heterosis is expression of dominance of the component of various traits; change from C_4 to C_3 photosynthesis in *Sorghum* after anthesis; physiological, biochemical and genetic basis of heterosis; causes of poor yield in pulses and remedial measures; physiological mechanism of drought tolerance in crops balance between productivity and stability; drought-induced senescence; physiological basis of irrigation; remote sensing for assessing crop condition; environmental aspects of agriculture, methane production from rice paddy and impact of climate change on Indian agriculture.

Important Publications: **(1)** Physiological, biochemical and genetic basis of heterosis (1975) *Advances in agronomy* Academic Press, New York, Vol. 27, pp. 123–174. **(2)** New parameters and selection criteria in plant breeding (1982) *contemporary basis of crop breeding* Pergamon Press, pp. 1–35. **(3)** Irrigation in India: Physiological and phenological approach to water management in grain crops (1984) *Advances in irrigation* Academic Press, Vol. 3, pp. 129–212. **(4)** Sink-induced senescence in crop plants (1987) *Recent advances in plant biochemistry* Wiley, Delhi, pp. 59–81. **(5)** Genetical aspects of photosynthetic potential in crop plants (1976) *Plant Biochem. J.* **3**, 81–90.

Memberships: Fellow: INSA 83; NASI; NAAS.

Awards & Distinctions: J J Chinoy Gold Medal 79 • FICCI Award 83 • S M Sircar Memorial Award 84 • VASVIK Award 85 • Om Prakash Bhasin Award 88 • Birbal Sahni Medal 89 • Jawaharlal Nehru Fellowship 91 • FIE Foundation Award 92 • INSA Sunder Lal Hora Medal 93 • INSA Nehru Birth Centenary Lecture Award 93 • NASI B P Pal Memorial Lecture 99 • IARI Lal Bahadur Shastri Mem. Lecture 99 • NAAS K Ramiah Medal 99 • ISCA Nehru Birth Centenary Award 2000.

Sirsat, Satyavati Motiram

Elected: 1975
Position: Founder Trustee, Shanti Avedna Ashram
Specialization: Cancer Research Pathology; Wound Healing and Regeneration; Viruses and Human Cancer
Date of Birth: 7 October 1925; Karachi, Pakistan
Spouse: M V Sirsat
Address: Bhagirathi Sadan, 17th Road, Khar, Mumbai 400 052, India
Tel. (022) 2642 1889, (022) 2620 9575 (O), (022) 2646 3092 (R)

Education: Bombay Univ.: MSc, PhD.

Career: Tata Memorial Hospital, Bombay: Doctoral Student; Tata Mem. Centre: Founder Dir, Chairperson, Medical Ethics etc. 46–, Head, Ultrastructure Dn 47; Bharatiya Vidya Bhavan Ayurvedic Centre, Mumbai: 17 yrs.

Scientific Work: Main interest lies in the study of cancers and their surrounding stromal milieu at levels of molecular interaction. Some of the important areas of investigation are cell membranes and carcinogenesis; collagen structure and function and epithelialmesenchymal interrelationships; and viruses and human breast cancer. Recognized oral submucous fibrosis as a distinct entity endemic to India and the pathogenesis underlying its precancerous nature. The possible role of viruses in human breast cancer has been studied. Preliminary data give positive molecular biological evidence for the involvement of an RNA virus along with other hormonal factors in the causation of human breast cancer.

Awards & Distinctions: ICMR Shakuntaladevi Amirchand Prize • Transasian Award for Biol. Electron Microscopy • Bharatiya Vidya Bhavan Citation for Lifetime Award.

Sitaram, Alladi

Elected: 1991
Position: Prof. Emeritus, ISI, Bangalore and NBHM Vis. Prof., IISc
Specialization: Harmonic Analysis on Euclidean Spaces; Lie Groups
Date and Place of Birth: 2 October 1947; Madras
Parents: Alladi Kuppuswami and Lakshmi
Spouse: Annapoorna
Address: Statistics & Mathematics Unit, Indian Statistical Institute, R V College Post, Bangalore 560 059, India
Tel. (080) 2848 3002/254, 2848 3006 (O), (080) 2558 6103 (R)
email: sitaram@isibang.ac.in, sitaram.alladi@gmail.com

Education: Osmania Univ.: BSc 66; Univ. of Cambridge, UK: BA Hons 69; Univ. of Washington, USA: PhD 75.

Career: TIFR, Mumbai: Vis. Member 75–76; ISI, Kolkata: Assoc. Prof. 76–84; ISI, Bangalore, Stat. Math Unit: Prof. 85–2007, NBHM Vis. Prof. 2007–; Univ. of Washington, USA, Dept of Maths: Vis. Lecturer 82–83, Vis. Assoc. Prof 83–84, Vis. Prof. 90–91.

Scientific Work: Worked on the analogues of the celebrated theorems of N Wiener (the Tauberian theorem) and of L Schwartz on mean periodic functions, the latter jointly with S C Bagchi, in the context of spherical functions on semi simple Lie groups. Able to apply, jointly with S C Bagchi, the results on mean periodic functions to the Pompeiu problem for an important subclass of Riemannian manifolds, the so-called symmetric spaces. Also obtained many results for the Pompeiu problem on R^n, some of it jointly with S C Bagchi. Established, jointly with R Rawat, connections between the Pompeiu problem and L^1-analogues of the Wiener–Tauberian theorem for the action of the group of rigid motions on R^n. The Heisenberg uncertainty principle and other uncertainty principles in physics can also be viewed as purely Fourier analytic results. Along with M Cowling, J Price and also with V Pati, M Sundari and S Thangavelu, has been able to establish results that suggest these uncertainty principles are valid in the much more general context of Fourier analysis on Lie groups and also perhaps even for general eigenfunction expansions with respect to elliptic operators.

Memberships: Member: American Mathematical Soc.

Sitaramam, Vetury

Elected: 1990
Specialization: Bioenergetics; Biomembranes; Biochemistry
Date and Place of Birth: 24 December 1946; Kakinada, Andhra Pradesh
Parents: V Ramakrishnarao and V Sitamahalakshmi
Spouse and Children: Somalata; one *s*, one *d*
Address: No. 18, S.No. 245, Anant Co-operative Housing Society, D P Road, Pune 411 007, India
Tel. (020) 2729 7808 (R), Mobile: 98600 03258
email: sitaramamv@gmail.com

Education: Madras Univ.: MBBS 70; IISc, Bangalore: PhD 76.

Career: CMC, Vellore: House Surgeon 70–71; IISc, Bangalore: Res. Fellow 71–76; Yale School, Medical School, USA, Dept of Pathology: Res. Assoc. 76–78; National Inst. of Nutrition, Hyderabad: Sr Res. Offr 78–85, Asst Dir 85–87; Univ. of Poona, Pune: Prof. 87–2007.

Scientific Work: Major work relates to fine structure and dynamics of biological membranes. Work on gravitational field effects on permeability of biological membranes, variable stoichiometry of ATP synthesis and variable porosity of respiring mitochondria challenged the central premise of the Nobel Prize winning work of Peter Mitchell. This led to the discovery of stretch activation of all classes of membrane proteins, which also forms the physical basis of variable work-calorie relationship in man. Developed an important idea that membrane proteins create a charge-based anisotropy and worked out the logic of codon distribution to aminoacids. Demonstrated the universality that voids in bilayer, through which quinones and side chains of proteins move, are the rate limiting step for catalysis and diffusion in membranes. Another major interest is in the definition of poverty in developing countries and has succeeded in defining poverty as a nonaggregable commodity-specific poverty using Indian databases.

Important Publications: **(1)** Gravitational field enhances permeability of biological membranes to sucrose: An experimental refutation of sucrose-space hypothesis (1981) *Proc. Natl. Acad. Sci. USA* **78**, 3441–3445. **(2)** Genetic code preferentially conserves long range interactions among the aminoacids (1989) *FEBS Lett.* **247**, 46–50. **(3)** Biology of the inner space: Voids in biopolymers (1998) *J. Theor. Biol.* **195**, 245–271. The energetic basis of osmotolerance in plants: I. Physical principles (1997) *J. Theor. Biol.* **189**, 333–352. **(4)** Some conceptual and statistical issues on measurement of poverty (1996) *J. Stat. Plan. Inference* **49**, 53–71.

Memberships: Fellow: Maharashtra Acad. of Sci. 93.

Awards & Distinctions: ICMR V N Patwardhan Award 85.

SivaRaman, Chury

Elected: 1977
Specialization: Molecular Enzymology and Enzyme; Microbial Technology
Date and Place of Birth: 2 December 1923; Palghat, Kerala
Parents: C Kunhi Raman and Janaki
Spouse and Children: Hephzibah; one *s*, one *d*
Address: 111, Anand Park, Aundh, Pune 411 007, India
Tel. (020) 2588 6626 (R), Mobile: 9823069480
email: churya.sivaraman@gmail.com

Education: Univ. of Madras: BSc Hons 45, PhD 49.

Career: NCL, Pune, Biochem. Dn: Dy Dir, Head, Consultant 50–87; Consultant, Dept. of Biotechnol., GOI, 89–90.

Scientific Work: Major basic contribution was the characterization of citrate lyase multi-enzyme complexes which initiate the anaerobic utilization of citrate by a number of bacteria. In the area of applied research, developed an immobilized pencillin acylase system which Hindustan Antibiotics Ltd used in their semisynthetic penicillins production plant to manufacture 100 tonnes 6 APA during 86–97.

Important Publications: **(1)** Purification of citrase from *Aerobacter aerogenes* (1961) *Biochem. Biophys. Acta* **52**, 212. **(2)** Cooperative binding of manganese to citrate lyase from *K. aerogenes* (1979) *FEBS Lett.* **105**, 267. **(3)** Photoaffinity labelling of *klebsiella aerogenes* by p-acidobenzoyl coenzyme A (1982) *Biochemistry* **21**, 4434. **(4)** Purification and properties of citrate lyase from *Escherichia coli* (1983) *Biochemistry* **22**, 4657. **(5)** Evidence for repetitive structure of the large ACP subunit of *Escherichia coli* citrate lyase (1984) *Biochem. Biophys. Res. Commun.* **122**, 1253.

Memberships: Fellow: INSA 86.

Awards & Distinctions: VASVIK Award 86 • FNA 86.

Sivan, M R Ramaswami*

Elected: 1934
Specialization: Agriculture; Forestry; Botany
Last Address: 49, Mowbray's Road, Mylapore, Madras, India
***Deceased**

Sivaram, Swaminathan

Elected: 1992
Position: Dir, NCL, Pune
Specialization: Polymer Chemistry and Technology
Date and Place of Birth: 4 November 1946; Chittur, Palghat, Kerala
Parents: C S Swaminathan and Krishna
Spouse and Children: Rama; one s (Sushil)
Address: National Chemical Laboratory, Homi Bhabha Road, Pune 411 008, India
Tel. (020) 2590 2600 (O), (020) 2590 2405 (R)
email: s.sivaram@ncl.res.in; URL: www.ncl-india.org

Education: Univ. of Madras: BSc 65; IIT Kanpur: MSc 67; Purdue Univ., USA: PhD 71.

Career: Institute of Polymer Sc., Univ. of Akron, USA: Res. Assoc. 71–73; Indian Petrochemicals Corporation Ltd, Baroda, Res. Centre: Res. Chemist 73–77, Sr Res. Chemist 76–79, Principal Res. Offr 79–82, Sr Res. Manager 82–87, Dy General Manager 87–89; NCL, Pune: Sci. and Head of Polymer Chem. Dn 89–2002, Dir 2002–.

Scientific Work: Focus of research is in new chemistry and processes for high performance polymers; controlled synthesis of polymers using principles of living polymerization and catalyst design; structure-property relationships in polymers. In the area of controlled polymer synthesis, emphasis is on the design of new initiators capable of controlling polymer molecular weights, molecular weight distribution and chain-end functionalities. Some significant advances to emerge from the group are as follows: a) discovery of a novel concept of self -extinguishable metal free catalysts for carbonate interchange reactions and its application to the synthesis of poly (arylcarbonate). b) Application of solid state polymerization techniques to predominantly amorphous polymers such as poly(arylcarbonates) and poly(arylesters). c) First ever particle forming dispersion polymerization chemistry for polyurethanes. The method enables nearly monodisperse particles of polyurethane, in the 200 nm to microns range to be prepared directly from the constituent monomers. d) Synthesis of functional poly(olefins) using metallocene catalysts. e) New synthetic approaches to functionalized acrylic polymers using group transfer and atom transfer radical polymerizations. f) The chemistry of ligated alkyl lithium initiators for living polymerization of methyl methacrylate has been explored. This led to new strategies for controlled synthesis of methacrylate polymers.

Important Publications: **(1)** Synthesis of *N*-poly(alkenyl) acrylamides: A novel class of acrylamido functional macromonomers (2004) *Macromolecules* **37**, 8499. **(2)** A novel tridentate nitrogen donor as ligand in copper catalyzed ATRP of methylmethacrylate (2005) *J. Polym. Sci. Polym. Chem.* **43**, 4996. **(3)** Unfavourable coordination of copper with methyl vinyl ketone in atom transfer radical polymerization (2006) *Macromolecules* **39**, 5555. **(4)** Copolyesters based on poly(butylenes terephthalate)s containing cyclohexyl and cyclopentyl ring: Effect of molecular structure on the thermal and crystallization behaviour (2007) *Macromolecules* **40**, 6906. **(5)** Synthesis of amphiphilic poly(methacrylate-b-ethylene oxide) copolymers from monohydroxy telechelic poly(methyl methacrylate) as macroinitiator (2008) *J. Polym. Sci., Polym. Chem.* **46**, 2132.

Memberships: Fellow: NASI 92; INSA 98; MRSI; CRSI; TWAS 2000; INAE 2002; Soc. of Polymer Sci., India • American Chemical Soc.; Soc. of Chemical Industry, UK.

Awards & Distinctions: VASVIK Award 87 • M Santappa Silver Jubilee Award in Polymer Science 88 • MRSI Medal 90 • K G Naik Gold Medal 92 • S&M Netrawala Scientist of the Year Award 94 • ICICI Technology of the Year Award 95 • Om Prakash Bhasin Award 95 • FICCI Award 96 • IACS S R Palit Memorial Award 97 • ISCA Millenium Medal 2000 • CRSI Silver Medal 2002 • Vishwakarma Medal 2003 • MRSI Distinguished Lecturership Award 2003 • J C Bose National Fellow • Padma Shri • Asian Paints Distinguished Speaker Award • CSIR Technology Award in Chemical Sciences • IITK Distinguished Alumnus Award.

Sivasanker, Subramanian

Elected: 1995
Position: Prof., IIT, Chennai
Specialization: Industrial Catalysis; Petroleum Refining and Petrochemical Production; Green Chemistry
Date and Place of Birth: 25 October 1944; Pondicherry
Parents: I Subramanian and S Kalvikkarasy
Spouse and Children: S Jayalakshmi; one *s*, one *d*
Address: National Centre for Catalysis Research, Indian Institute of Technology, Chennai 600 036, India
Tel. (044) 2257 4238 (O), (044) 4551 1960 (R), Mobile: 98401 03865
email: ssivasanker@iitm.ac.in

Education: Madras Univ.: BSc 64, MSc 66, PhD 70.

Career: Loyola College, Madras: Lecturer 70–73; Indian Inst. of Petroleum, Dehradun: Sci. 73–84; Wayne State, USA: Res. Assoc. 80–81; NCL, Pune: Sci. 84–2006; IIT Chennai: Prof. and Chair Prof., Natl Centre for Catalysis 2006–.

Scientific Work: Carried out both basic and applied research in heterogeneous catalysis since 1966. The basic research resulted in more than 200 publications and the applied research resulted in about 60 patents (including 20 international). Developed model for the active species in hydrodesulphurization (HDS) catalysts; better understanding of metal-support interactions in Pt–KL catalysts and the nature of Fe, V and Mn ions incorporated in zeolites and mesoporous materials. Been involved in the development of catalysts for reforming of naphtha, deep desulfurization of diesel, alkylation of benzene, dewaxing of petroleum oils, hydroxylation of phenol and oxidation of methanol to formaldehyde etc; some of the catalysts have been commercialized.

Important Publications: **(1)** Physico-chemical investigations of the basicity of cation exchanged ETS-10 molecular sieves (2003) *J. Phys. Chem.* **B107**, 8517. **(2)** Synthesis, characterization and catalytic properties of tin containing analogs of MCM-41 (1999) *J. Catal.* **183**, 281. **(3)** Anisotropic chemical shielding, M-site ordering and characterization of extra framework cations in ETS-10 studied through MAS/MQ-MAS NMR and molecular modelling techniques (1998) *J. Am. Chem. Soc.* **120**, 4752. **(4)** On the incorporation of vanadium in zeolite lattices (1996) *J. Phys. Chem.* **100**, 3809. **(5)** The structural chemistry of cobalt-moly-alumina catalysts (1980) *Catal. Rev. Sci. Eng.* **22**, 401.

Memberships: Fellow: Maharashtra Acad. of Sci. 93.

Awards & Distinctions: VASVIK Award 91 • ICICI Technology Award, NCL Res. Foundation 93 • Shirinbai & Maneckji Neterwala Scientist of the Year Award 95 • Catalysis Soc. of India Eminent Sci. 96.

Sokhey, Sahib Singh*

Elected: 1934
Specialization: Medicine; Epidemiology
Date and Place of Birth: 15 December 1887; Amritsar, Punjab
Spouse: Leila
Last Address: The Haffkine Institute, Parel, Bombay 400 012, India
***Deceased:** 23 October 1971

Education: Punjab Univ.: BSc Hons 05; Univ. of Edinburgh: MBChB 11, MA 12, MD 25.

Career: Indian Medical Service; Haffkine Inst., Bombay: Asst. Dir 25–32, Dir 32–49; WHO, Geneva: Asst Dir General 49–52; Member of Rajya Sabha 52–53; CSIR: Adviser 62; Emeritus Sci. 65–71.

Scientific Work: Studied the epidemiology of plague; produced tetanus, diphtheria toxioids and the polyvalent antivenin; produced sulphathiazole and carried out research in synthetic drugs, paludrine, the anti-malarial drug. Installed the first molecular distillation equipment in the country to separate vitamin A from shark liver oil. Great improvements were made in the manufacture of plague and cholera vaccine. Determined the average normal standard of Indian man and woman for the chemical analysis of blood, non-protein nitrogen urine, uric acid, creatinine phosphates, plasma, proteins, fibrin, albumin, cholesterol, fatty acids, haemoglobin, and basal metabolic rate urea clearance test, etc. Produced superior qualities of plague vaccine with no toxic reaction. Was instrumental in starting Hindustan Antibiotics (Pimpri) and IDPL.

Memberships: Fellow: INSA 35 • President: Med. Sec. of Indian Sci. Congress.

Awards & Distinctions: Knighted 46 • Major-General 46 • Lenin Peace Prize 47.

Somasundaram, Kumaravel

Elected: 2008
Position: Assoc. Prof., IISc, Bangalore
Specialization: Cancer Biology; Genetics and Virology
Date and Place of Birth: 8 October 1962; Sendurai, Tamil Nadu
Parents: V Somasundaram and T Saraswathi
Spouse and Children: V Kumar; one *d*
Address: Microbiology & Cell Biology Laboratory, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2360 7171 (O), (080) 2360 2136 (R)
email: skumar@mcbl.iisc.ernet.in

Education: Univ. of Madras: BVSc 79–85; Madurai Kamaraj Univ.: MSc 87, PhD 87.

Career: Madurai Kamaraj Univ.: Grad. Student 87–93; Northwestern Univ., USA: Postdoc Fellow 93–95; Univ. of Pennsylvania, USA: Res. Assoc. 95–99; IISc, Bangalore: Asst Prof. 99–2005, Assoc. Prof. 2005–.

Scientific Work: Made important contributions in the field of eukaryotic cell transformation. The finding that adenovirus oncogene E1A induces endogenous p73 levels while simultaneously inhibiting its cell cycle arrest function suggests an important role for p73 during cellular transformation. The development of a replication-deficient adenovirus expressing p73 (Ad-p73) and its utility as a potential cancer gene therapy reagent is an important application of his work. This is particularly useful against cervical cancer, where p53-based therapeutic approach is found to be ineffective. Also identified the p53: Notch1 functional interaction through mTOR signalling as a basis for chemoresistance in leukemia and breast cancer and developed novel therapeutic modalities. Further, dissected the and α (AP-2α mechanism behind the growth inhibition by activator protein 2 identified it as a chemosensitivity determinant. In collaboration with medical institutions, has identified many glioma markers with diagnostic, prognostic and therapeutic significance.

Important Publications: **(1)** Novel glioblastoma markers with diagnostic and prognostic value identified through transcriptome analysis (2008) *Clin. Cancer Res.* **14**, 2978–2987. **(2)** PBEF1/NAmPRTase/Visfatin: A potential malignant astrocytoma/glioblastoma serum marker with prognostic value (2008) *Cancer Biol. Ther.* **7**, 665–670. **(3)** Apoptosis induction by AP-2α involves transcriptional repression of Bcl-2 (2006) *J. Biol. Chem.* **281**, 16207–16219. **(4)** Survival signalling by Notch1: Mammalian target of rapamycin (mTOR)-dependent inhibition of p53 (2006) *Cancer Res.* **66**, 4715–4724. **(5)** Activator protein 2 alpha (AP-2α) status determines the chemosensitivity of cancer cells: Implications in cancer chemotherapy (2005) *Cancer Res.* **65**, 8628–8634.

Memberships: Fellow: NASI 2007; INSA 2009.

Awards & Distinctions: AACR Young Investigator Award 99.

Somayajulu, Bhamidipati Lakshmidhara Kanakadri

Elected: 1980
Specialization: Nuclear Oceanography; Geochemistry; Cosmic Ray-Produced Radioisotopes
Date and Place of Birth: 5 March 1937; Vishakapatnam, Andhra Pradesh
Parents: Suryanarayana and Jagadamba
Spouse and Children: Vasanti; one *s*, one *d*
Address: No. 3, New Aangan Members' Association, Vastrapur, Ahmedabad 380 015, India
Tel. (079) 2674 7807 (R)
email: soma@prl.res.in

Education: Andhra Univ.: BSc Hons 56; BARC Training School 58–59; Bombay Univ.: PhD 69.

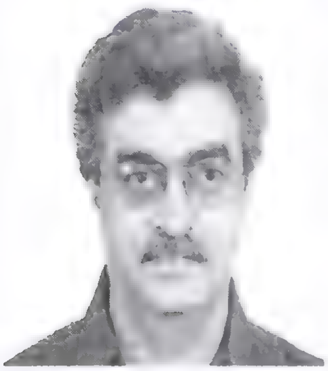
Career: AVN College, Vishakhapatnam: Demonstrator 56–58; TIFR, Bombay: Res. Fellow 59–73; Scripps Institution of Oceanography, USA: Res. Assoc. 64–67, Postdoc Fellow 72–73; PRL: Assoc. Prof. 74–83, Prof. 84–90, Sr Prof. 90–97, CSIR/INSA Hon. Sci. and Hon. Prof. 97–2005.

Scientific Work: Developed the ^{10}Be (half-life = 1.5 my) dating method for oceanic ferromanganese nodules, carried out extensive studies of cosmogenic silicon-32 (= 40 y) in world oceans to understand time scales of marine geochemical process involving silicon, dated several near-shore and deep sea sediments using U–Th decay series nuclides, studied uranium input to the oceans from Indian rivers and elucidated the age and origin of quarternary carbonate deposits of Saurashtra and Kutch regions of Gujarat. Currently involved in study of paleoceanography using beryllium-10, lateritization processes and oceanic circulation using carbon-14 (= 5730 y) and Ra-228 (= 5.75 y) in the Arabian Sea and Bay of Bengal. Also pursuing paleoceanographic paleoclimatic studies using marine sediments through geochronological and geochemical approaches as part of the International Geosphere Biosphere Programme (IGBP).

Memberships: Fellow: INSA 83; NASI 89; TWAS; Indian Geophysical Union; Geological Soc. of India.

Awards & Distinctions: S S Bhatnagar Prize 78 • Hari Om Ashram Award 81.

Sonti, Ramesh Venkata



Elected: 2006
Position: Sci., CCMB, Hyderabad
Specialization: Plant–Microbe Interactions; Plant Genetics; Bacterial Genetics
Date and Place of Birth: 24 May 1960; Vishakapatnam, Andhra Pradesh
Parents: S V Ramaniah and S S Lakshmi
Spouse and Children: Sita Susarla; two s (Ananth, Sharath)
Address: Centre for Cellular & Molecular Biology, Uppal Road, Hyderabad 500 007, India
Tel. (040) 2719 2577 (O), (040) 2715 0821 (R), Mobile: 94410 55295
email: sonti@ccmb.res.in

Education: Andhra Univ.: BSc 80; Univ. of Hyderabad, MSc 82, MPhil 83; Univ. of Utah: PhD 90.

Career: Univ. of Utah, USA: Grad. Asst 83–86, Grad. Res. Asst 86–90; MIT, USA: Postdoc Res. Assoc. 91–93; CCMB: Sci. 93–.

Scientific Work: Research focussed on understanding the interaction between rice and the bacterial pathogen, *Xanthomonas oryzae* pv. oryzae (Xoo). Work led to the identification of novel Xoo virulence functions. These include an adhesin-like protein that plays an important role in entry into rice leaves; an extra cellular signalling molecule that facilitates virulence by promoting iron uptake; a bacterial secretion system and its secreted proteins which are involved in degrading rice cell walls; a phytase-like secreted protein, etc. Has shown how host innate immunity is induced as well as suppressed during rice-Xoo interactions. DNA fingerprinting studies have been used to show that a single Xoo lineage is widely distributed in India. Rice resistance genes that are effective against Indian strains of Xoo have been identified. Molecular markers have been used to incorporate these resistance genes into the genetic background of commercially important rice cultivars.

Important Publications: **(1)** Role of horizontal transfer in the evolution of a highly variable lipopolysaccharide biosynthesis locus in xanthomonads that infect rice, citrus and crucifers (2007) *BMC Evol. Biol.* **7**, 243. **(2)** Functional interplay between two *Xanthomonas oryzae* pv. oryzae secretion systems in modulating virulence on rice (2007) *Mol. Plant-Microbe Interactions* **20**, 31–40. **(3)** A high molecular weight outer membrane protein of *Xanthomonas oryzae* pv. oryzae exhibits similarity to non-fimbrial adhesins of animal pathogenic bacteria and is required for optimum virulence (2002) *Mol. Microbiol.* **46**, 637–647. **(4)** rpfF mutants of *Xanthomonas oryzae* pv. oryzae are deficient for virulence and growth under low iron conditions (2002) *Mol. Plant-Microbe Interactions* **15**, 463–471. **(5)** Mutants of *Xanthomonas oryzae* pv. oryzae deficient in general secretory pathway are virulence deficient and unable to secrete xylanase (2000) *Mol. Plant-Microbe Interactions* **13**, 394–401.

Memberships: Fellow: NAAS 2004; NASI 2005; INSA 2009.

Awards & Distinctions: DBT National Bioscience Award for Career Development 2003–04 • S S Bhatnagar Award 2004.

Sood, Ajay Kumar

Elected: 1991
Position: Prof., IISc, Bangalore
Specialization: Physics at Nanoscale; Nanotubes; Graphene; Raman Spectroscopy; High Pressure Physics of Soft Matter
Date and Place of Birth: 26 June 1951; Gwalior
Parents: Ishwar Singh Sood and Bimla Devi
Spouse and Children: Anita; one *s*, one *d*
Address: Department of Physics, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2360 2238, (080) 2293 2964 (O), (080) 2360 8323 (R)
email: asood@physics.iisc.ernet.in; URL: http://www.physics.iisc.ernet.in/~asood/

Education: Panjab Univ.: BSc Hons 71, MSc Hons 72; BARC Training School: 72–74; IISc, Bangalore: PhD 82.

Career: BARC, Bombay: Sci. Offr 72–74; IGCAR, Kalpakkam, Materials Sci. Dn: Sci. Offr 74–88; Max-Planck Inst., Germany: Postdoc Res. 85; IISc, Bangalore, Dept of Phys: Assoc. Prof. 88–94, Prof. 94–; JNCASR: Hon. Sr Fellow –.

Scientific Work: Interest mainly in two areas of condensed matter physics: soft condensed matter such as colloids and surfactant-based self-organized assemblies; Raman spectroscopy of novel systems at ambient conditions and under high pressures. The latter includes fullerenes, nanoparticles, semiconductors-bulk and superlattices, correlated oxides and nanotubes graphene wave systems. Interest is to use Raman spectroscopy in studying phase transitions-structural electronic, mixed-valence, etc. in a class of these systems as a function of temperature, pressure and composition. Studies in soft condensed matter encompass static and dynamic light scattering, optical microscopy, flow behaviour including spatio-temporal chaotic dynamics and non-equilibrium steady states. Recent interest has been to use the effect of electric field on colloids to develop ultrasensitive immunoassays.

Important Publications: **(1)** *Phys. Rev. Lett.* (2008) **101**, 078301. **(2)** *Nature Nanotechnol.* (2008) **3**, 210–215. **(3)** *Clin. Chem.* (2008) **54**, 366–370. **(4)** *Phys. Rev. Lett.* (2006) **96**, 108301. **(5)** *Science* (2003) **299**, 1042–1044.

Memberships: Fellow: NASI 95; INSA 96; TWAS 2001 • Life Member: Indian Physics Assn; Indian Laser Assn • Member: Intl Steering Committee of Raman Spectroscopy.

Awards & Distinctions: S S Bhatnagar Prize 90 • TWAS Award 2000 • GD Birla Science Award 2000 • FICCI Award 2000 • ISCA Millennium Gold Medal 2000 • INSA Homi Jehangir Bhabha Medal 2002 • Goyal Prize 2003 • IISc Alumni Award 2003 • C V Raman Award 2003 • National Award 2006 • DAE Raja Ramanna Award.

Sopory, Sudhir Kumar

Elected: 1992
Position: Prof. and Group Leader, ICGEB, New Delhi
Specialization: Molecular Plant Physiology; Plant Tissue Culture and Transformation
Date and Place of Birth: 7 January 1948; Ambala, Hatyana
Parents: Jawaharlal Sopory and Vijayalaxmi
Spouse and Children: Meena; one *s*, one *d* (Akhil, Shailaja)
Address: Plant Molecular Biology, International Centre for Genetic Engineering & Biotechnology,
Aruna Asaf Ali Marg, New Delhi 110 067, India
Tel. (011) 2674 2962 (O), (0129) 222 2208 (R), Mobile: 98114 31741
email: sopory@icgeb.res.in, sopory@hotmail.com

Education: J & K Univ.: BSc Hons 66, MSc 68; Univ. of Delhi: PhD 72.

Career: JNU, New Delhi: Asst Prof. 73–79, Assoc. Prof. 79–85, Prof. 85–97; Max-Planck-Inst., Germany: Res. Assoc. 76–78; Univ. of Texas: Fulbright Fellow 81–82; Plant Molecular Biology Lab., USDA Beltsville, USA: Vis. Sci. 87–88; Univ. of Munich, Germany, Mol. Bio. Lab.: Humboldt Fellow 91–92; Botanisches Inst. der Universitat Munich, Germany: 91–92.

Scientific Work: Worked out the detailed physiology of factors regulating pollen embryo formation and reported the production of monoploid plants in potato; showed the regulation of nitrate reductase by substrate, ammonium and light, phytochrome regulation of Ca^{2+} fluxes and its effect on the turnover of phosphoinositide cycle and identification of protein kinase C type activity was demonstrated, discovered the glyoxalase pathway in plants and showed its role in abiotic stress tolerance.

Important Publications: **(1)** Transgenic tobacco overexpressing glyoxalase pathway enzymes grow and set viable seeds in zinc spiked soils (2006) *Plant Physiol.* **140**, 613–623. **(2)** Light mediated regulation defines a minimal promoter region of TOP2 (2003) *Nucl. Acid Res.* **31**, 5256–5265. **(3)** Pea topoisomerase I is phosphorylated and stimulated by casein kinase 2 and protein kinase C (2003) *Plant Physiol.* **132**, 2108–2115. **(4)** Genetic engineering of glyoxalase pathway in tobacco leads to enhanced salinity tolerance (2003) *Proc. Natl. Acad. Sci. USA* **100**, 14672–14677. **(5)** Glyoxalase I from *Brassica juncea*: Molecular cloning, regulation and its over expression confer tolerance in transgenic tobacco under stress (1999) *Plant J.* **17**, 385–396.

Memberships: Soc. of Biological Chemists • Fellow: NASI 93; INSA 94; NAAS 2002; TWAS 2005 • Vice-President: Indian Soc. for Plant Physiology and Biochemistry and Society of Plant Biochemistry and Biotechnology.

Awards & Distinctions: Fulbright Fellowship 82–83 • UGC, Career Award 85 • H L Chakravorty Award 86 • S S Bhatnagar Prize 87 • Alexander von Humboldt Fellowship 88 • P Maheshwari Award Lecture • Birbal Sahni Medal, Botanical Soc. • Saligram Sinha Award • N B Das Memorial Award Lecture • Platinum Jubilee Award Lecture, Indian Science Congress Assn • Tenth Godnev Award Lecture, Belarus Acad. of Sci. • 2006 Birbal Sahni Centenary Gold Medal Award for Lifetime Achievements in Plant Sciences • Padma Shri.

Sreekantan, Badanaval Venkata

Elected: 1965
Position: Hon. Vis. Prof., NIAS, Bangalore
Specialization: Cosmic Rays; High Energy Physics; High Energy Astronomics
Date and Place of Birth: 30 June 1925; Nanjangud, Karnataka
Parents: B V Pundit and Laxmi Devamma
Spouse and Children: Ratna; two s (Ramesh, Venkatesh)
Address: National Institute of Advanced Studies, Indian Institute of Science Campus,
Bangalore 560 012, India
Tel. (080) 2218 5082 (O), (080) 2334 7434 (R)
email: bvs@nias.iisc.ernet.in; URL: http://www.iisc.ernet.in/nias

Education: Univ. of Mysore: BSc Hons 46, MSc 47; Univ. of Bombay: PhD 54.

Career: IISc, Bangalore: Res. Scholar 47; TIFR, Bombay: Doctoral Student 48–54, Assoc. Prof./Prof. 67–75, Dir 75–87, INSA Srinivasa Ramanujan Prof. 87–92; NIAS, Bangalore: Radhakrishnan Vis. Prof. 92–94, Sr Homi Bhabha Fellow 95–97; NIAS: Hon. Vis. Prof. 96–; MIT, USA: Vis. Sci. 54–55, 65–67, 93–94.

Scientific Work: Research encompasses three distinct but related areas of fundamental science, viz. cosmic rays, elementary particles, and high-energy X-ray, gamma ray astronomics. Carried out deep underground experiments in Kolar Gold Fields, cloud chamber studies of cosmic ray interactions at Ooty; X-ray, Gamma ray astronomy experiments with balloons from Hyderabad and rockets from TERLS and SHAR. Also made extensive air shower experiments at Ooty and KGF.

Important Publications: (1) A century of cosmic ray research (2002) *Frontiers in Astrophysics* Allied Pub., New Delhi. (2) *Extensive air showers* (1998) World Sci. (3) Historical aspects of gamma ray astronomy (2002) *Bull. Astron. Soc. India* 30, 5–10.

Memberships: Fellow: INSA 76; NASI 89; Maharashtra Acad. Sci.; Indian Physics Assn • Vice-Chmn: IUPAP Cosmic Ray Commission 87–93 • Chmn: Governing Councils of SAMEER and Indian Inst. of Astrophysics and Res. Council, NPL.

Awards & Distinctions: C V Raman Award 77 • INSA Homi Jahangir Bhabha Medal 78 • R D Birla Award 82 • Padma Bhushan 88 • Indian Science Congress, Ramanujan Award 89 • MP Govt, Jawaharlal Nehru Award 91 • Sir M Visvesvaraya Sr Scientist Medal 2004.

Sreenivasaiah, Bettadapur Narasimhaiah*

Elected: 1939
Specialization: Physics; Meteorology
Date and Place of Birth: 24 July 1904; Hassan, Karnataka
Last Address: 104, Kenmore-A, Lokhandwala Complex, Andheri West, Bombay 400 058, India
***Deceased:** 16 February 1987

Education: Univ. of Mysore: BSc 25; Univ. of Calcutta: MSc 27.

Career: Intermediate College, Bangalore: Lecturer in Phys. 28; India Meteorological Dept, Agra, Poona and Karachi: Asst Meteorologist 28–42, Meteorologist, Bangalore and Madras 42–49; Regional Dir of Nagpur and Dir of Aviation Services, Delhi 49–56, Dy Dir General 56–59; PRL, Ahmedabad: Administrative Offr 62–65, Assoc. Sci. 67–69.

Scientific Work: Published papers on X-ray analysis of crystal structure of paranitrotoulene.

Sreenivasan, Arunachala*

Elected: 1950
Specialization: Biochemistry; Nutrition Food Science and Technology
Date and Place of Birth: 13 July 1909; Pamini, Tanjore Dist, Tamil Nadu
Parents: Brahma Sri Arunachala Sastrigal and Krishnammal
Spouse and Children: Sundarammal; one *s*, two *d* (Shivakumar, Indumati, Sumati)
Last Address: 132, 6A Cross, 9th Main Road, Rajmahal Vilas Extension, Bangalore 560 080, India
***Deceased:** 20 July 1996

Education: Univ. of Madras: BA Hons 30, MA 31, DSc 36.

Career: IISc, Bangalore: Res. Biochemist 31–38; Inst. of Plant Industry, Indore: Biochemist 38–43; Bombay Univ., Dept of Chemical Technol.: Prof. 43–59; CFTRI, Mysore: Dy Dir 59–64; BARC, Bombay, Dept of Biochem. and Food Technol. Dn: Head 64–71, Emeritus Sci., Adviser, Dept of Atomic Energy 71–73; Cancer Res. Inst., Tata Memorial Centre, Bombay: Dir 74–75; Consultant Food Sci. and Technologist 76.

Scientific Work: Early work was on certain physical and biochemical quality attributes of rice varieties grown under dry farming and wet land. Conducted research on development and evaluation of processing procedures and unit operations and their effects on sensory and nutritional qualities of processed foods; fermentative production of enzymes such as amylases, proteases and pectinases; organic acids such as acetic, citric and fumaric acids; and amino acids lysine and glutamic acid; and characterization of protein and carbohydrate moieties of certain natural foods. Carried out biochemical studies with particular reference to the loci of molecular lesions in radiation injury. Studies included structure and function of sub-cellular organelles; tissue differentiation and de-differentiation processes; biological activity of macromolecules as evidenced from their expression of diverse transcriptional and translational alterations. Initiated and carried out processes for low-dose-cobalt-60 gamma irradiation preservation of food entities relevant to the national economy.

Important Publications: **(1)** Further characterization of rat liver mitochondrial fractions, lipid composition and synthesis and protein profiles (1976) *Biochem. J.* **156**, 215–223. **(2)** Effect of whole-body irradiation on transcription in the rat thymus (1975) *Int. J. Radiat. Biol* **27**, 363. **(3)** The significance of promitochondrial structures in rat liver for mitochondrial biogenesis (1973) *Biochem. J.* **134**, 687. **(4)** Study of soluble lipoprotein in rat liver mitochondria (1971) *Biochem. J.* **121**, 643.

Memberships: Fellow: INSA 50; Assn of Food Scientists and Technologists 90 • President: Soc. of Biological Chemists, India.

Awards & Distinctions: ICAR Rafi Ahmed Kidwai Memorial Prize 66–67 • Padma Bhushan 74 • Bombay Univ. Outstanding Teacher Award 85 • IISc Distinguished Alumnus Award 85.

Sreenivasan, Kasi*

Elected: 1944
Specialization: Electronics; Radio Engineering
Date of Birth: 10 July 1899
Last Address: Krishna Kripa, 275/31, 17th Cross Road, Upper Palace Orchard, Bangalore 560 005, India
***Deceased:** 17 August 1992

Education: Univ. of Mysore: BSc 20; IISc, Bangalore: AIISc 27.

Career: Les Laboratories, France: Radio Engineer 30; IISc, Bangalore, Dept of Electrical Communication Engg: Asst Prof. 32–45, Prof. & Head 48–59, Acting Dir 55–57; College of Engg, Guindy: Prof. of Telecommunication Engg 45–48; Madras Inst. of Technol.: Dir 60–71.

Scientific Work: Was greatly responsible in introducing electronics and communication engineering education in India. Conducted research in radio, broadcasting techniques and architectural acoustics.

Memberships: Fellow: London Inst of Electrical Engineering; IEEE New York 43 • President: Inst. of Telecommunication Engg; Inst. of Electronics and Telecommunication Engineering 56–57, Disting. Fellow 80.

Sreenivasaya, Motnahalli*

Elected: 1934
Date and Place of Birth: 5 December 1895; Bangalore
Parents: M Lakshminaranappa and Kuppamma
Spouse and Children: Gowramma; one *s*, two *d*
Last Address: 17th Cross Road, Malleswaram, Bangalore 560 003, India
***Deceased:** 16 January 1969

Education: Univ. of Mysore: BA 18; IISc: AIISc 24, FIISc 33.

Career: IISc, Bangalore; Res. Student 18–19, Res. Asst 22–41, Lecturer 41, Prof. and Head of Fermentation Technology 42–53; CDRI, Lucknow: Hon. Sci. 54.

Scientific Work: At IISc, initiated work on (a) acetone fermentation (b) alcohol from Mahua flowers, and (c) fermentation of cellulose. Detailed studies included acetone and butyl alcohol, acetic acid fermentation, fermentation technology in molasses, slaughter house products, citric acid, acetone-butanol fermentation, industrial utilization of mahua, fermentation of toddy and cellulose intensive bacterial oxidation and oxidation of alcohol to acetic acid, production of yeast, national collection of type cultures, industrial enzymes, antibiotics, biochemical studies on type cultures, power alcohol production, microbiological formation of sulphur, cytogenetics of yeasts and fungi.

Important Publications: **(1)** The disintegration of tobacco mosaic virus preparations with sodium dodecyl sulphate (1938) *Biochem J.* **32**, 1707–1710. **(2)** The non-protein-nitrogen of pulses (1936) *Biochem. J.* **30**, 8, 1416–1418.

Awards & Distinctions: Editor. *Current Science* 42–50.

Sri Niwas

Elected: 1995
Position: Prof., IIT Roorkee
Specialization: Geoelectromagnetism; Geophysical Inversion; Geohydrology
Date and Place of Birth: 4 July 1946; Rakahat Village, Uttar Pradesh
Parents: Ram Adhar Pandey and Indrasana
Spouse and Children: Shashi Kala; two *s*, one *d*
Address: Department of Earth Sciences, Indian Institute of Technology, Roorkee 247 667, India
Tel. (01332) 28 5570 (O), (01332) 28 5579 (R), Mobile: 94120 71932
email: srsnpfes@iitr.ernet.in

Education: BHU: BSc Hons 66, MSc 68, PhD 74.

Career: BHU: Res. Scholar 66–70, CSIR Res. Fellow 70–73; Univ. of Roorkee: CSIR SRF 73–74, PDF 74–76, Pool Offr 76–77, Lecturer 77–80, Reader 80–89, Prof. 92; Kurukshetra Univ.: Prof. 89–92; IIT, Roorkee: Prof. 92–.

Scientific Work: The most significant research consists of an imaginative integration of the theory of exponential approximations of a rational function, the properties of Lipischitz integral and the theory of minimum norm inverse solution, resulting in the design of matrix operators of greater resolving power and efficiency in producing solution to the outstanding problems of geoelectric exploration. These matrix operators can most efficiently be used totransform data from apparent resistivity domain to resistivity kernal domain and vice-versa; to transform apparent resistivity data measured through one set of electrode configuration to any other that may be desired and to transform point source resistivity data to the corresponding line source data and vice-versa. Has filled the long awaited gap in geoelectrical computation technique in order to make 2D resistivity modelling and inversion meaningful without excessive computation. Thus this research work resulted in an elegant approach of great aesthetic and practical value whose many applications have been explored and enquired into with scientific vigour, imagination and sensibility to applications and interpretation on aquifer mapping and inversion have been prepared and supplied to individuals and exploration agencies. Rigorous examination of different inversion methodologies led to the enquiry in the comparative potential of various geoelectromagnetic techniques in the exploration of thick sedimentary basin, through singular value analysis (SVA). It has been shown for the first time that SVA can be used to define and compare quantitatively the resolving power of different geoelectromagnetic methods in deciphering resistive and conductive environment.

Memberships: Fellow: INSA 97; NASI 97.

Awards & Distinctions: Univ. of Roorkee Khosla Annual Res. Award 87 • S S Bhatnagar Prize 91.

Srianand, Raghunathan

Elected: 2008
Position: Prof., IUCAA, Pune
Specialization: QSO Spectroscopy; Cosmology; Structure Formation
Date and Place of Birth: 1 February 1969; Chennai, Tamil Nadu
Parents: N Raghunathan and R Vimala
Spouse and Children: S Veena; one *d*
Address: Inter-University Centre for Astronomy & Astrophysics, Post Bag 4, Ganeshkhind,
Pune University Campus, Pune 411 007, India
Tel. (020) 2560 4220 (O), (020) 2560 4412 (R)
email: anand@iucaa.ernet.in

Education: Madurai Kamaraj Univ.: BSc 89; MSc 91; Utkal Univ., Bhubaneswar: PhD 95.

Career: IUCAA, Pune: Postdoc 95–96, Sci. 96–.

Scientific Work: Absorption lines seen in the spectra of QSOs, that are produced by intervening intergalactic matter, allows one to probe the time evolution of various physical quantities in the universe in an unbiased way. Has used the spectra of QSOs and obtained important information on the redshift evolution of the cosmic microwave background temperature, different dimentionless fundamental constants like electromagnetic coupling constant (alpha) and electron to proton mass ratio (mu), and physical conditions in high redshift protogalaxies. Involved in large systematic surveys of molecules at high redshift using Very Large Telescope (VLT) and H I through 21-cm absorption using Giant Metrewave Radio Telescope (GMRT).

Memberships: Intl Astronomical Union; Astronomical Soc. India.

Awards & Distinctions: IASc Assoc. 96–2001 • INSA Young Scientist Award 97 • N S Satyamuthy Award 98 • Vainu Bappu Gold Medal for Young Astronomer 2004 • Vikram Sarabhai Award 2008 • S S Bhatnagar Award 2008.

Sridharan, Asuri

Elected 1989
Specialization: Engineering Properties of Clays and Clay Mineralogy; Foundation Engineering
Date and Place of Birth: 1 January 1937; Madras, Tamil Nadu
Parents: Asuri Parthasarathy and Rajammal
Spouse and Children: Mallika, one *s*, one *d* (Bharath, Bhama)
Address: No. 40, West Park Road, Malleswaram, Bangalore 560 003, India
Tel. (080) 2334 1046 (R), Mobile: 98458 06379
email: asridhran@yahoo.com, sridharanasuri@yahoo.com

Education: Sri Venkateswara Univ., Tirupati: BE 59; IISc., Bangalore: ME 60, DSc 92; Purdue Univ., USA: PhD 68.

Career: IISc, Bangalore: Lecturer 62–68, Asst Prof. 68–75, Assoc. Prof. 75–82, Prof. 82–84, Chmn Dept of Civil Engg and Mechanical Sci. Dn 84–87, Chmn, Mechanical Sci. Dn 87–94, KSIIDC Prof., 91–94, Dy Dir 94–97, Adviser

97–2000, INSA Sr Sci 2000–2005. Purdue Univ., USA: David Ross Fellow 65–67; Univ. of Karlsruhe, Germany: Vis. Prof. 75–77; JNCASR: Hon. Prof. 94–2000.

Scientific Work: Established areas of research on basic and fundamental aspects of the engineering behaviour of clays. Research on the physiochemical mechanisms controlling the engineering behaviour of clays has brought out that the electrical attractive and repulsive forces at clay particle level play a dominant role in controlling the macro-engineering behaviour.

Important Publications: **(1)** Pore size distribution studies (1971) *J. ASCE*, SM Div., **97**, 5, 771–787. **(2)** Mechanisms controlling volume change of saturated clays and the role of effective stress concept (1973) *Geotechnique*, (London), **23**, 3, 359–382. **(3)** Double layer theory and compressibility of clays (1982) *Geotechnique*, (London), **32**, 2, 133–144. **(4)** Rectangular hyperbola method of consolidation analysis (1987) *Geotechnique,* (London), **37**. **(5)** Mechanisms controlling the undrained shear strength behaviour of clays (1999) *Can. Geotech. J.* **316**, 6, 1030–1038.

Memberships: Fellow: INAE 89; INSA 92 • Hon. Fellow: Indian Geotechnical Soc. 99.

Awards & Distinctions: von Humboldt Sr Fellow 75 • Khosla Natl Award 90 • Govt of India Central Board of Irrigation & Power Diamond Jubilee Award 93 • UGC Hari Om Ashram Award 93 • IISc Alumni Award 93, 2005 • IGS Kuckelmann Award 94 • Roorkee Univ. S R Mehra Memorial Award 94 • Distinguished Engg Alumnus Award of Purdue Univ., USA 95 • President: Indian Geotechnical Soc. 96–98 • ACCE Gourav Award 2002 • INSA PC Mahalanobis Medal 2006.

Sridharan, Rajagopal

Elected: 1995
Position: Dir, SPL, VSSC, Thiruvananthapuram
Specialization: Solar Terrestrial Physics; Space Physics; Optical Aeronomy
Date and Place of Birth: 7 March 1948; Madurai, Tamil Nadu
Parents: D Rajagopal and Ramalakshmi
Spouse and Children: Usha; one *s*, one *d*
Address: Space Physics Laboratory, Vikram Sarabhai Space Centre, Thiruvananthapuram 695 022, India
Tel. (0471) 256 3663 (O), (0471) 244 3701 (R), Mobile: 94477 66685
email: r_sridharan@vssc.gov.in

Education: Madurai Univ.: BSc 69, MSc 71; Gujarat Univ.: PhD 83.

Career: Physical Res. Lab., Ahmedabad: Sci. Asst 71–79, Engineer/Sci. 79–85, Fellow 85–89, Assoc. Prof. 89–97, Prof. 98; VSSC Thiruvananthapuram: Dir, Space Physics Lab. 98–, (additional charge) Programme Dir Space Sci., ISRO HQ 2007–.

Scientific Work: Contributed to the field of electrodynamics of the earth's atmosphere, particularly the structure and energetics of the equatorial thermosphere and its response to dynamical forcings. Development of the state-of-art Fabry–Perot spectrometer for measurement of thermospheric temperatures and winds, the first of its kind in India, has given new results on the interaction between the ionized and neutral components of the earth's atmosphere. Recently developed dayglow photometer capable of measuring features a minute fraction of the background is a major breakthrough in observational techniques, and measurements made have helped in understanding the relative importance of different mechanisms for emission of dayglow in the atmosphere. The extension of this method for high resolution spectroscopic measurements for obtaining the line profiles to be able to derive dynamical parameters pertaining to the region of emission, be it the terrestrial or planetary atmosphere, is considered extremely important. First to carry out *in situ* measurements of the tenuous atmosphere of Moon, as a part of the Moon impact probe in the Chandrayaan-1.

Memberships: Fellow: NASI 2005.

Awards & Distinctions: Hari Om Ashram Prerit Vikram Sarabhai Res. Award 91 • Astronautical Soc. of India Award 2006.

Sridharan, Ramaiyengar

Elected: 1975
Position: Adjunct Prof., Chennai Mathematical Inst.
Specialization: Algebra
Date and Place of Birth: 4 July 1935; Cuddalore, Tamil Nadu
Parents: Ramaiyengar and Vijayalakshmi
Spouse and Children: Vasundra; one *s*, one *d*
Address: Chennai Mathematical Institute, H1, Sipcot IT Park, Padur Post, Siruseri, Chennai 603 103, India
Tel. (044) 3298 3441–2 (O), (044) 2448 3692 (R)
email: rsridhar@cmi.ac.in

Education: Vivekananda College: BA Hons 52; Madras Univ.: MA 55; Columbia Univ., New York: PhD 60.

Career: Univ. of Bombay, Centre for Advanced Study: Prof. 64–67; TIFR, Bombay, School of Mathematics: Prof., Sr Prof. 67–2000; Chennai Mathematical Inst., Adjunct Prof. 2000–.

Scientific Work: After initial work on filtered algebra and Lie algebras, a fundamental theorem of projective geometry for rings was proved and restricted Lie algebras were studied. The problem of cancellation of Azumaya algebras was considered which led to a systematic study of low rank quadratic forms. This in turn led to a new invariant of an involution and this invariant has become an interesting object of study.

Memberships: Fellow: INSA 80: NASI 94.

Awards & Distinctions: S S Bhatnagar Prize 80.

Srikantiah, C*

Elected: 1936
Specialization: Chemistry
Last Address: University Medical College, Mysore, India
***Deceased**

Career: Univ. Med. College, Mysore: Prof. of Chemistry.

Srikrishna, Adusumilli

Elected: 1994
Position: Prof., IISc, Bangalore
Specialization: Synthetic Organic Chemistry; Natural Products Chemistry
Date and Place of Birth: 1 January 1955; Gudivada, Andhra Pradesh
Parents: A V R Viswanadha Rao and Vanajakshi
Spouse and Children: Bhavani; two *d* (Deepti, Aiswarya)
Address: Department of Organic Chemistry, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2293 2215 (O), (080) 2360 0550 (R), Mobile: 94490 36550
email: ask@orgchem.iisc.ernet.in, askiisc@gmail.com

Education: Andhra Univ.: BSc 73, MSc 75; Univ. of Hyderabad, MPhil 76, PhD 81.

Career: Univ. of Chicago, Dept of Chem.: Res. Assoc. 82–83; Columbia Univ., USA, Dept of Chem.: Res. Assoc. 83–85; IISc, Dept of Organic Chem.: Lecturer 85–89, Asst Prof. 89–94, Assoc. Prof. 94–99, Prof. 99–.

Scientific Work: Made notable contributions in the area of organic synthesis. A number of efficient enantiospecific methodologies have been developed using (R)-carvone as chiron employing stereo- and regiocontrolled reactions, and their utility is demonstrated in the enantiospecific synthesis of a variety of bridged bi- and tri-cyclic systems, such as bicyclo[3.2.1]octanes, bicyclo[3.3.1]nonanes, bicyclo[2.2.2]octanes, bicyclo[4.2.0]octanes, bicyclo[4.3.1]decanes, tricyclo[2.2.2.02, 6]octanes, tricyclo[4.3.1.03, 7]decanes (isotwistane), tricyclo [3.3.0.02, 8]octanes, tricyclo[4.3.0.02, 8]nonanes, tricyclo[4.4.0.01, 3]decane, etc. The methodologies have been extended to the synthesis of a variety of natural products and their analogues. Some of the representative examples, which were completed in the recent past employing (R)-carvone as the starting material are: allopupukeanone, 2-pupukeanone, 9-pupukeanone, 4-thiocyanatoneopupukeanane, both the enantiomers of 2-thiocyanatoneopupukeanane, 9-isocyanoneopupukeanane, patchouli alcohol, valeriananoids A–C, both the enantiomers of seychellene, all the four stereoisomers of the A ring enyne synthon of vitamin D analogues, trans-himachalene, solavetivone, damascones, 5-senecioloxythapsane, spirodysin, BC-ring system of taxanes, AC-ring systems of taxanes, both the enantiomers of homogynolide A, thujopsene, pacifigorgiadienes. Some of these investigations have confirmed (or revised)/established the relative as well as absolute stereostructures of the natural products.

Important Publications: **(1)** Construction of vicinal quaternary carbon atoms by Ireland ester Claisen rearrangement. Total synthesis of herbertenolide, herberteneacetal, herbertene-1, 14-diol and herbertene-1, 15-diol (2005) *Tetrahedron Lett.* **46**, 4879. **(2)** Enantiospecific first total synthesis of 2-hydroxysolanascone, the aglycone of the phytoalexin isolated from flue-cured tobacco leaves (2006) *Tetrahedron Lett.* **47**, 335. **(3)** Enantiospecific first total synthesis and assignment of absolute configuration of the sesquiterpene cucumin H (2003) *Org. Lett.* **5**, 2295. **(4)** Enantiospecific first total synthesis of (+) cis, anti, cis-3-hydroxy-1, 8, 12, 12-tetramethyl–4-oxatricyclo[6.4.0.02, 6]dodecan-9-yl senecioate, the optical antipode of a natural thapsane isolated from *Thapsia villosa* (2003) *Tetrahedron Lett.* **44**, 1031. **(5)** Enantiospecific total synthesis of 4-thiocyanatoneopupukeanane (2001) *J. Org. Chem.* **66**, 4379.

Memberships: Fellow: NASI 2001; INSA 2003.

Awards & Distinctions: INSA Medal for Young Scientists 87 • B M Birla Prize in Chemical Sciences 94 • SSB Award in Chemical Sciences 97.

Srinath, Laxmipuram Srinivasachar

Elected: 1974
Specialization: Experimental Mechanics; Engineering Design; Reliability Engineering
Date of Birth: 15 March 1927
Parents: Laximipuram Srinivasachar and Champakamma
Spouse and Children: Pushpa; one *s*, one *d* (Ashok, Nina)
Address: 291/69, 2nd Main, 38th Cross, 8th Block, Jayanagar, Bangalore 560 070, India
Tel. (080) 2663 5583 (R)
email: srinath_ls@sify.com

Education: Univ. of Mysore: BE 49; IISc, Bangalore: ME 51; Illinois Inst. of Technology, USA: DPhil 58.

Career: Confederation of British Industries, UK & General Aircraft Co., UK: Fellow 53–55; Illinois Inst. of Technol., USA: Asst Prof. of Engg Mechanics 58–59; Aeronautical Dev. Establishment, Bangalore: Sr Sci. Offr 59–60; Univ. of Kansas, USA: Prof. of Mechanics and Aerospace Engg 60–63; IIT, Kanpur, Dept of Mechanical Engg: Prof. 63–66, Sr Prof. 66–71; IISc, Bangalore: Sr Prof. of Mechanical Sci. 71–84, Emeritus Prof. 90; IIT Madras: Dir 84–90.

Scientific Work: Investigated stresses in aircraft engine crankshaft using stress coat and resistance strain gauges; shear-flow analysis in aircraft wing sections; developed a non-destructive method for three-dimensional photoelasticity; design and construction of scattered light polariscope; experimental techniques necessary in the use of a scattered polariscope; designed and constructed a precision polariscope for three-dimensional photoelastic investigations; dynamics stresses and stress wave propagation in photoelastic materials; stresses in L-shaped levers with varying fillet radius and pivot hole locations; construction of high speed streak type drum camera for dynamic stress investigations; rotational effects in three dimensional photoelasticity; impact machine for determining dynamic properties of viscoelastic materials; various educational aids from system approach applications of holography to photoelastic stress analysis; development of a new non-destructive method for three dimensional photoelasticity, etc.

Important Publications: **(1)** *Advanced mechanics of solids*, McGraw-Hill Publications. **(2)** *Reliability engineering*, Affiliated East-West Publications. **(3)** *Applied linear programming*, Affiliated East-West Publication. **(4)** *Design essentials of engineering systems*, Macmillan Publication. (5) *PERT and CPM-principles and applications*, Affiliated East-West Publication.

Memberships: Fellow: INAE 89.

Srinivas, Vasudevan

Elected: 1994
Position: Sr Prof., TIFR, Mumbai
Specialization: Algebraic Geometry, Algebraic K-Theory and Commutative Algebra
Date and Place of Birth: 6 June 1958; Delhi
Parents: Tanjore Parthasarathy Vasudevan and Sarla
Spouse and Children: Vijaylaxmi Trivedi; one *d*
Address: School of Mathematics, Tata Institute of Fundamental Research, Homi Bhabha Road,
Mumbai 400 005, India
Tel. (022) 2278 2217 (O), (022) 2280 4966 (R)
email: srinivas@math.tifr.res.in

Education: Bangalore Univ.: BSc 77; Univ. of Chicago, USA: MS 78, PhD 82.

Career: Institute for Advanced Study, USA: Vis. Member 82–83; TIFR, School of Mathematics: Vis. Fellow 83, Fellow 83–89, Reader 89–92, Assoc. Prof. 92–77, Prof. 97, Sr Prof. –; Duke Univ., USA; Northeastern Univ., USA; Max Planck Inst., Germany; Univ. of Paris, France; Univ. of Genova, Italy; Math. Sci. Res. Inst., USA: Vis. Positions.

Scientific Work: Initiated the sytematic study of *K*-theory of singular algebraic varieties; algebraic geometry in positive characteristic: classified smooth projective ordinary varieties with trivial tangent bundle; gave short proof of the normality of Schubert varieties; classified surface singularities of *F*-pure type; studied algebraic and topological self maps of homogeneous spaces, and solved a problem of R Lazarsfeld for quadrics; solved Zariski's problem on dimensions of linear systems of divisors on a surface.

Important Publications: **(1)** *Ann. Math.* (2002) 156. **(2)** *Invent. Math.* (2003) 151. **(3)** *Invent. Math.* (1999) 135. **(4)** *Ann. Math.* (1993) 137. **(5)** *Algebraic K-Theory* (1995) Birkhauser.

Memberships: Fellow: INSA 2009; Am. Math. Soc.

Awards & Distinctions: INSA Medal for Young Scientists 87 • IASc Assoc. 88–93 • Birla Award 95 • Swarnajayanthi Fellowship 98 • Bhatnagar Award 2003 • J C Bose Fellowship 2008 • TWAS Maths Prize 2008.

Srinivasaiengar, Chickmagalur Narayanaiengar*

Elected: 1939
Specialization: Mathematics
Date and Place of Birth: 21 February 1901; Kannenchally, Chickmagalur, Karnataka
Parents: Narayanaiengar and Nachiyaramma
Spouse and Children: Ratnamma; five *s*, five *d*
Last Address: College of Engineering, Bangalore, India
***Deceased:** 21 September 1972

Education: Univ. of Mysore: BSc 20; Univ. of Calcutta: MSc 22, DSc 32.

Career: Maharaja's College, Mysore: Lecturer 23–34; Central College, Bangalore: Asst Prof 34–38, Prof and Head of Maths Dept 46–55, Principal 55, UGC Prof 66–67; Visweswarayya Coll. of Engg, Bangalore: Prof of Maths 38–46; Natl College, Bangalore: Hon. Prof 55–58; Karnataka Univ., Dharwar: Prof and Head of Maths Dept 58–63, UGC Prof. 63–65.

Scientific Work: Published papers on envelopes of systems of surfaces, singular solutions of ordinary differential equations of the first order and second order, simultaneous differential equations, special integrals of partial differential equations of the first order in three variables, theorem concerning the *p*-discriminant, lines of striction on the quadric, etc.

Important Publications: (1) *The theory of infinite series*. Natl Publishing House, New Delhi; (2) *History of ancient Indian mathematics*. World Press, Calcutta.

Srinivasan, Ganesan

Elected: 1984
Specialization: Condensed Matter Physics; Astrophysics
Date and Place of Birth: 9 April 1942; Madurai District
Parents: V Ganesan and Meenakshi
Spouse and Children: Girija; one *d*, one *s* (Supriya, Vinayak)
Address: 190, I Main Road, I Block, BEL Layout, Vidyaranyapura, Bangalore 560 097, India
Tel. (080) 2364 2378 (R)
email: srini@rri.res.in, gsrini1942@gmail.com

Education: Nagpur Univ.: BSc 62; Univ. of Madras: MSc 64; Univ. of Chicago, USA: PhD 70.

Career: American College, Madurai: Instructor 64–65; Univ. of Chicago, USA: Teaching Asst 65–67; James Franck Inst., Univ. of Chicago, USA: Res. Asst 67–70; IBM Res. Lab., Switzerland: IBM Fellow 71–72; Chalmers Univ. of

Technol., Sweden: Res. Assoc. 72–73; Cavendish Lab., Univ. of Cambridge, UK: Member of Res. Staff 73–76; RRI, Bangalore: Sci. 76–81, Assoc. Prof. 81–85, Prof. 85–2004; ISRO, Vis. Prof., 2005–06.

Scientific Work: Paper on the 'microscopic dielectric function of a model semiconductor' is now a standard reference. Was the first to study the effect of Coulomb interaction between localized electrons in disordered systems showing the appearance of an energy gap. Such a 'Coulomb gap' was experimentallly discovered some fifteen years later. Was the first to investigate the correlation contribution to the surface energy of metals. Other work of note in condensed matter physics is the prediction of electron crystallization inversion layers, a prediction experimentally verified many years later. First work in astrophysics advanced the novel idea of 'Recycled Pulsars', which resolved the mysteriously unusual parameters of the famous Binary Pulsar. Subsequent work on the evolution of supernova remnants drastically modifying the conventional picture has been fully vindicated by X-ray and radio observations. Was the first to publish a detailed theoretical scenario for the origin and evolution of millisecond pulsars. The many predictions made concerning the population of millisecond pulsars have been confirmed by observations during the last two decades. The prediction made more than twenty years ago that the millisecond pulsars will turn out to be a new population of gamma ray sources has been confirmed by the recently launched Fermi Space Telescope. Was the first to propose a novel mechanism for the decay of magnetic fields of neutron stars involving the interaction between the superfluid and superconducting states in their interior.

Important Publications: **(1)** Microscopic dielectric function of a model semiconductor (1969) *Phy. Rev.* **178**, 1244. **(2)** Statistical mechanics of charged traps in amorphous semiconductors (1971) *Phys. Rev.* **B4**, 2581. **(3)** On the origin of the recently discovered ultra-rapid pulsar (1982) *Curr. Sci.* **51**, 1096. **(4)** On the implication of the recently discovered 5 millisecond binary pulsar PSR 1855+09 (1986) *Curr. Sci.* **55**, 327. **(5)** A novel mechanism for the decay of neutron star magnetic fields (1990) *Curr. Sci.* **59**, 31.

Awards & Distinctions: K S Krishnan Gold Medal • Jagirdar of Arni Gold Medal • University of Madras P E Subramani Iyer Gold Medal 1964 • IBM Fellow 1971–72 • Jawaharlal Nehru Fellow 2007–08 • President: Commission 44 on High Energy Astrophysics of the International Astronomical Union: 1997–2000; Division XI of the IAU on Space and High Energy Astrophysics: 2000–03; Astronomical Society of India: 2000–03.

Srinivasan, Jayaraman

Elected: 1992
Position: Prof., Chmn, Mechanical Sci. Dn, IISc, Bangalore
Specialization: Thermal Science; Climate Science; Solar Energy
Date and Place of Birth: 26 September 1947; Madras
Parents: Tanjore Ramachandra Jayaraman and Rajalakshmi
Spouse and Children: Yadumani; one *d*
Address: Centre for Atmospheric and Oceanic Sciences, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2293 3068 (O), (080) 2331 4998 (R)
email: jayes@caos.iisc.ernet.in

Education: IIT Madras: BTech 69; State Univ. of New York, USA: MS 71; Stanford Univ.: PhD 75.

Career: IIT Kanpur, Mechanical Engg Dept: Lecturer 75–77, Asst Prof. 77–82; IISc, Bangalore, Mechanical Engg Dept and Centre for Atmospheric Sci.: Asst Prof. 82–87, Assoc. Prof. 87–92, Prof. 92–; NASA Langley Res. Center, USA: NASA-NRC Sr Resident Res. Assoc. 93–95.

Scientific Work: In atmospheric sciences, focus of research has been on the spatial and temporal variations in tropical climate. Has shown that simple climate models can simulate some of the observed patterns of meridional migration of cloud bands (also called inter-tropical convergence zones or ITCZ). On monthly and longer time scales, the spatial location of ITCZ is constrained by the requirement of positive net energy convergence in the atmosphere. In thermal sciences, the major focus of research has been on the performance of a 240 m^2 solar pond built at IISc, Bangalore. Studies indicated the viability of small solar ponds for process heat and subtle influence of wall effects in small solar ponds.

Important Publications: **(1)** Meridional migration of tropical convergence zones (1996) *J. Appl. Meteorol.* **35**, 1189–1202. **(2)** Radiative forcing (1994) *Climate Change*, Cambridge University Press, pp. 163–203. **(3)** Climate change (2007) *The physical science basis*, Cambridge University Press, pp. 589–662. **(4)** Net cloud forcing at the top of the atmosphere in the Asian monsoon region (2000) *J. Clim.* **13**, 650–657. **(5)** *The dynamics of technology: Creation and diffusion of scientific knowledge* (2003) Sage Publications.

Membeships: Fellow: INSA 99; INAE 97.

Awards & Distinctions: IIT Madras 69 • Banco Foundation Gold Medal 69 • J C Bose Fellow 2007–12.

Srinivasan, Mandakolathoor Subrahmanya

Elected: 1985
Position: Prof. Emeritus, BHU, Varanasi
Specialization: Micropaleontology; Paleoceanography; Marine Geology
Date and Place of Birth: 9 October 1938; Attimalaipattu, North Arcot Dist, Tamil Nadu
Parents: Subrahmanya Shastri and Mangalam
Spouse and Children: Lalitha; one *d*
Address: 42/4, HIG Flats, Kabir Nagar, Durgakund, Varanasi 221 005, India
Tel. (0542) 230 7310 (O), (0542) 231 1887 (R), Mobile: 94505 31962
email: mssrinivasan@rediffmail.com

Education: BHU, Varanasi: BSc 58, MSc 60; Victoria Univ. of Wellington, New Zealand: PhD 65.

Career: BHU, Varanasi, Dept of Geology: Lecturer 60–72, Reader 72–83, Prof. 83–2000, Head 84–86; BHU, Academic Staff College: Dir 91–93; Victoria Univ., New Zealand: British Commonwealth Scholar 63–65; Univ. of Rhode Island, USA, Graduate School of Oceanography: Res. Assoc. 72–74, 79–81.

Scientific Work: Contributions to the neogene of Andaman-Nicobar Islands and in the area of oceanic biostratigraphy, neogene biotic evolution with special reference to the Northern Indian Ocean and the southwest Pacific. Provided a basic clue to the study of the evolutionary trends in this group and for the first time the classification of the group has been treated in a totally phylogenetic or natural order. The present thrust of research has been to integrate marine microfossil events with paleomagnetic and isotopic records to understand the link between the biological, physical and chemical events and the resultant biotic and paleoceanographic/paleotechnic evolutions through neogene. Recent studies include correlation of neogene planktonic foraminiferal events between Indian Ocean and the south Pacific deep sea cores, applying graphic correlation technique to establish the synchroneity and diachroneity of these events and Cenozoic opening and closing of ocean gateways and their impact on global ocean circulation and climate. Major contribution also made in the areas of multiple microfossil biostratiography and correlation.

Important Publications: **(1)** A review of Neogene planktonic foraminiferal biostratigraphy: Applications in the Equatorial and South Pacific (1981) *SEPM Special Publ.* USA **32**, 395–432. **(2)** *Neogene planktonic foraminifera – a phylogenetic atlas* (1983) Hutchinson Ross Publ. Co., Pennsylvania, USA. **(3)** Improved correlation of late neogene planktonic foraminiferal datums in the equatorial to cool subtropical DSDP sites, southwest Pacific: Application of the graphic correlation method (1991) *Geol. Soc. Ind. Mem.* **20**, 55–93. **(4)** Paleoceanography: Evolution of oceans through the Cenozoic (1998) *Ocean science trends and future directions*, INSA, New Delhi, Akademia Books International, New Delhi pp.113–128. **(5)** *Geology of Andaman-Nicobar: The Neogene* (2007) Capital Publ. Co., New Delhi, p.164.

Memberships: Fellow: INSA 85; NASI 94; TWAS • Chmn: Natl Committee for Intl Union of Geological Sci. • Executive Member: Regional Committee on Pacific Neogene Events Japan • Leader: Intl Working Group on Equatorial Pacific Neogene Chronostratigraphy.

Awards & Distinctions: La Tauche Medal 60 • UGC National Lecture Award 84–85 • Malaviya Memorial Foundation Award 86 • L Rama Rao Gold Medal 88 • Platinum Jubilee Lecture of ISC 91 • Hari Om Ashram Trust Award, UGC 94 • Swami Pranavanand Saraswati Award 2001 • Birbal Sahni Memorial Lecture 2001 • IGU H N Siddiqui Memorial Lecture 2008.

Srinivasan, Narayanaswamy

Elected: 2007
Position: Assoc. Prof., IISc, Bangalore
Specialization: Protein Functions; Structures and Evolution; Bioinformatics in Genomics; Metabolism and Signal Transduction
Date and Place of Birth: 1 April 1962; Madras, Tamil Nadu
Parents: K Narayanswamy and N Jayalakshmi
Spouse and Children: Sowdhamini; one *d*
Address: Molecular Biophysics Unit, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2293 2837 (O), (080) 2366 6473 (R), Mobile: 93421 07047
email: ns@mbu.iisc.ernet.in; URL: http://pauling.mbu.iisc.ernet.in

Education: Madras Univ.: BSc 82, MSc 84; IISc: PhD 91.

Career: Birkbeck College, London: Postdoc 91–94, Hon. Res. Fellow 98–; Ludwig Inst. for Cancer Res., London: Postdoc 94–96; Univ. of Cambridge: Postdoc 96–98; IISc Asst Prof. 98–2004, Assoc. Prof. 2004–.

Scientific Work: Interested in the understanding of complex interplay between forms and functions of proteins in order to address fundamental questions on molecular and structural basis of protein action in living systems. Addressed the questions, using computational analysis and integration of available biological data, often at the genomic and multi-genomic scale. Recent work has reacted to the growth of genomic data in a number of ways. Developed several new methods and databases for the analysis of genomic data in order to recognize functions of newly discovered proteins. Analyses of the human, protozoan and plant genomes resulted in the discovery of many new protein kinases. Work on protein–protein interactions suggested that interaction interfaces in highly divergent homologous proteins are not conserved and this feature in mainly responsible for alterations in the course of biological pathways.

Memberships: Fellow: NASI 2007.

Awards & Distinctions: S S Bhatnagar Prize 2007 • Intl Sr Fellow of the Wellcome Trust, UK 99–2004 • Sr Fellow of the Manchester Univ. • Vis. Prof., Reunion Univ., France.

Srinivasan, Ramachandran*

Elected: 1968
Specialization: X-ray Crystallography; Molecular Biophysics; Wide Line NMR
Date and Place of Birth: 5 July 1933; Nannilam, Tamil Nadu
Spouse and Children: Uma; one *d*
Last Address: Department of Crystallography & Biophysics, University of Madras, Guindy Campus, Madras 600 025, India
***Deceased:** 19 September 2004

Education: Univ. of Madras: BSc Hons 54, MSc 55, PhD 58.

Career: Univ. of Madras, Dept of Phys: Lecturer 58–62, Reader 62–64, Prof. 64–94, INSA Sr Sci. 94–2003; Univ. of Cambridge: Commonwealth Res. Fellow 62–63.

Scientific Work: Contributions have been essentially in structural crystallography both in theory and practice. On theoretical side, methods of structure analysis, using X-ray diffraction particularly Fourier theory and statistical applications received special attention. Special mention may be made of the proposal of Fourier representation of imaginary component in the presence of anomalous scattering, essentially unique solution to phase problem using anomalous scattering from single wavelength measurements both of which have come into sharp focus in recent years in macromolecular crystallography with the advent of synchrotron radiation facilities. On the practical side has developed powerful tools of analysis of data on protein structure and conformation and applied them to available large volume of protein data to yield best helical parameters for the alpha helix from single crystal globular proteins; presence of supercoiling even in single strands; E-helix, an extended helical conformation; and subhelical distortion and their quantification. More recently, has proposed a generalized methodology for essentially unique single parametric characterization of any biopolymer by treating biopolymers as quasi-rigid systems. Applications to proteins, double helical DNA and single stranded tRNA have been made. In solid state NMR, developed a powerful new method of line shape analysis using truncated moments which can be used for motional studies. Has been instrumental in the creation of NICRYS, a hard-data informatics centre at Madras relating to crystallography, perhaps the first of its kind in Asia.

Important Publications: **(1)** *Fourier methods in crystallography*, Pergamon Press. **(2)** Applications of X-ray anomalous scattering in structural studies (1972) *Advances in structural research by diffraction methods*. Published over 200 scientific articles, wrote or edited nine books and monographs.

Memberships: Fellow: INSA; Inst. of Physics, London • Founder Fellow: Tamil Nadu Acad. of Sci.

Awards & Distinctions: Univ. of Madras Raman Research Prize 63.

Srinivasan, Ramanujam*

Elected: 1979
Specialization: Solid State Physics; Magnetic Resonance; Cryogenics
Date and Place of Birth: 21 April 1938; Madurai, Tamil Nadu
Parents: Srinivasa Ramanujam and Vedam
Spouse and Children: Prathima; two *d*
Last Address: 442, 11th Main, R M V Extension, Bangalore 560 080, India
***Deceased:** 10 September 1984

Education: Univ. of Patna: MSc; Univ. of Birmingham: PhD 64.

Career: IISc, Bangalore: Res. Offr in Phys. 64, Lecturer 65–68, Asst Prof. 68–71, Assoc. Prof. 71–73, Prof. in Phys. 73–84, Chmn of Phys. Dept 81–84.

Scientific Work: The first major problem tackled was the study of molecular motions in ferroelectric crystals, especially near the transition temperatures – Built most of the equipment needed. This effort elucidated many of the coherent and stochastic processes which led to an interest in liquid helium work in the early seventies. With characteristic zeal and effort made the cryogenics facility in the IISc, a leading national centre. In the mid-seventies, realised that studies at high pressures would provide a useful additional tool and developed high pressure NMR and ESR facilites, incorporating a few ingenious experimental ideas.

Awards & Distinctions: Ravi Shankar Award • S S Bhatnagar Award 82.

Srinivasan, Ramaswami

Elected: 1975
Specialization: Lattice Dynamics; Cryogenics; Laser Cooling of Atoms
Date and Place of Birth: 15 December 1931; Vellore, Tamil Nadu
Parents: S Ramaswami Ayyangar and Rukmani Ammal
Spouse and Children: Radha; one *s*, one *d*
Address: 143, V Cross, III Main Road, First stage, Vijayanagar Extension, Mysore 570 017, India
Tel. (080) 2361 0122–28/462 (O), (0821) 251 7504 (R)
email: rsv_physics@yahoo.co.in

Education: Univ. of Madras: BSc Hons 51, MA 52, PhD 57.

Career: IIT Madras, Dept of Phys: Asst Prof. 62–65, 67–69, Prof. 69–90, Dean 79–83, Dy Dir 81–84; Pennsylvania State Univ., USA, Materials Res. Centre: Vis. Res. Assoc. 65–67; Inst. of Technische Physik, Nuclear Res. Centre, Germany: Vis. Sci. 84–85; IUC-DAEF, Indore: Dir 90–95; RRI, Bangalore: Vis. Prof. 99–2005.

Scientific Work: First measurements on the dispersion of photoelastic constants of the alkali halides showed a sign reversal of p_{44} at a characteristic wavelength. Theoretical calculations on thermal expansion of caesium halides led to the conclusion that they would be examples of the perfect Gruneisen solid which was confirmed by experiment subsequently. Developed the lattice theory of the third-order elastic constants in crystals and the lattice theory of the elastic dielectric in ionic solids. Calculations of the third-order elastic constants and thermal expansion of hexagonal metals were performed for the first time using Keating's approach. The effect of dielectric screening on the third order elastic-constants of metals was investigated using a pseudo-potential theory. Surface modes of slabs of different ionic crystals with different orientations were investigated especially with reference to the instability of the surface. Developed a good low temperature laboratory in IIT Madras, and studies on the transport properties. The thermopower of high temperature superconductors was shown to be not related to phonon drag. Fluctuation contributions to conductivity were investigated in several high T_c materials. In Kalsruhe, the possibility of using a fountain effect pump for cooling superconducting magnets was investigated.

Important Publications: **(1)** Thermal properties of alkali halides with CsC1 structure (1963) *Proc. R. Soc. London* **A271**, 154. **(2)** Lattice theory of third order elastic constants of non-primitive non-piezoelectric lattices (1966) *Phys. Rev.* **144**, 620. **(3)** Lattice theory of the elastic dielectric (1968) *Phys. Rev.* **165**, 1041. **(4)** Investigatons in cooling with forced flow of He II (1985) *Cryogenics* **25**, 652. **(5)** Thermopower of zinc doped Y-Ba-Cu-O (1989) *Phys. Rev. B*, 6850.

Srinivasan, Ramaswamiah

Elected: 1992
Position: Tech. Adviser, Australian Indian Resources Pvt. Ltd, Bangalore
Specialization: Precambrian Geology; Archaean Palaeobiology; Geochemistry
Date and Place of Birth: 4 January 1943; Bangalore
Parents: V Ramaswamiah and V S Lakshamma
Spouse and Children: A Malathi; one *s*, one *d*
Address: 114, Kshitija, Ramanashree Nagar, SOS Post, Banneraghatta Road, Bangalore 560 076, India
Tel. (080) 4042 8420 (O), (080) 2649 9114 (R), Mobile: 99722 25797
email: srinivasanmalathi@rediffmail.com, srinivasan@geomysore.com

Education: Univ. of Mysore: BSc 61, MSc 63, PhD 88.

Career: Central College, Bangalore: Demonstrator 63–64, CSIR Res. Fellow 64–67; Dept of Mines & Geology, Karnataka: Asst Geologist 64; Bangalore Univ.: Res. Asst 67–69; Mysore Univ.: Lecturer 69–71, UGC Sr Res. Fellow 71–73; Geomysore Services: Consulting Geologist 73–86, Tech. Adv. 2003–; NGRI: Fellow 86–89, Sci. 89–2003.

Scientific Work: Contributions have relevance to appreciation of distinctive trends of archaean (> 2500 Ma) crustal evolution of southern India. Showed that archaean sedimentary basins here evolved from a rifted platform, through shelf to geosynclinical regime. Discovery of detrital pyrite grains in fluvial conglomerates of lower part of Dharwar sequence, evolved and complexly branched columnar stromotolites in the carbonate rocks of the middle part of the sequence, syngenetic fossil cyanobacterial filaments in carbonate rocks and iron formations combined with carbon and oxygen isotopic studies of graphites, carbonate rocks and cherts – point to evolution of oxygen in the archaean and provide rational explanation for large scale deposition of iron, manganese and carbonate rocks in Dharwar belts, a feature uncommon in many other Archaean terranes. Through detailed study of sedimentation and deformation cycles has worked out the stratigraphy of the Archaean supracrustal and infracrustal sequences of southern India and supported the stratigraphy by geochronological evidences.

Important Publications: **(1)** *A billion year history of the Dharwar craton* (3200 to 2100 my. ago) (1983) Geological Soc. of India, *Memoir* **4**, 121–142. **(2)** Sedimentology of the quaretz pebble conglomerates and quartzites of the Archaean Bababudan Group, Dharwar craton, south India: Evidence for early crustal stability (1986) *J. Geol.* **94**, 199–214. **(3)** Some distinctive trends in the evolution of the early precambrian Dharwar craton, south India (1990) *Precambrian continental crust and its economic resources*, Elsevier, pp.245–266. **(4)** Structural studies and their bearing on the early Precambrian history of the Dharwar tectonic province, southern India (1996) *Proc. Indian Acad. Sci. (Earth Planet. Sci.)* **105**, 379–412. **(5)** High mantle heat flow in a precambrian granulite province: Evidence from southern India (2003) *J. Geophys. Res.* B. 2084.

Memberships: Fellow: Geological Soc. of India; Minerological Soc. of India; INSA 96; NASI 98 • Member: Intl Assn of Sedimentologists.

Srinivasan, Sumangali Kidambi*

Elected: 1977
Specialization: Stochastic Processes; Quantum Mechanics and Fields; Quantum and Nonlinear Optics; Statistical Mechanics and Fluctuation Phenomena; Mathematical Biolology
Date and Place of Birth: 16 December 1930; Madras, Tamil Nadu
Parents: Govindachari and Rukmani
Spouse and Children: Vijayalakshmi; four s
Last Address: Department of Mathematics, Indian Institute of Technology, Madras 600 036, India
***Deceased:** 21 October 2006

Education: Univ. of Madras: BA Hons 53, MSc 55, PhD 57.

Career: School of Phys., Univ. of Sydney: Postdoc Fellow 57–58; Univ. of Madras, Dept of Phys: Natl Inst. of Sci. Sr Res. Fellow 58–59; IIT Madras, Dept of Maths: Lecturer 59–61, Asst Prof. 61–67, Prof. 67–74, Sr Prof. 74–90, Emer. Prof. 90–2006; SUNY, USA: 71, Natl Univ. of Singapore 82–83, Inst. for Angewandt Mathematics and Statistics 83, Centre for Particle Phys. Austin: Vis. Prof. 90, 91.

Scientific Work: Development of the theory of point processes with special reference to modelling in the broad area of physical sciences; formulation of stochastic kinetic equations in the context of fluctuating phenomena; completion to the fluctuation problem of electromagnetic cascades; theory of production of multiple particles in electromagnetic phenomena; development of the theory of stochastic integrals and differential equations with special reference to stochastic modelling; comprehensive stochastic model of a single neuron; determination of the photon counting statistics of Gaussian beams of arbitrary spectral profile; population point process approach for cavity radiation and photo-electron statistics; a unified approach to the theory of queues and inventories; the theory of reliability of two unit redundant systems.

Important Publications: (1) *Stochastic theory and cascade processes* (1969) American Elsevier. (2) *Stochastic point processes and their applications* (1974) Griffin, London. (3) *Stochastic point processes* (1974) Waterloo. (4) *Point process models of cavity radiation and detection* (1988) Griffin, London.

Srinivasan, V*

Elected: 1934
Last Address: 21, Devasigamany Mudaliar Road, P. O. Royapettah, Madras 600 014, India
***Deceased:** 29 July 1976

Education: FRCS, IMS.

Career: Medical College, Nagpur: Principal; Dir Gen. of Health Services, Vindhya Pradesh, Rewa 52; Employee's State Insurance Corporation, New Delhi: Medical Commissioner 54.

Sriramachari, Samavedam Srinivasa

Elected: 1967
Position: INSA Hon. Sci., Inst. of Pathology, New Delhi
Specialization: Nutritional, Hepatic, Osteo, Neuro and Toxicological Pathology;
Human Environmental Bio-Monitoring (HEBM)
Date and Place of Birth: 25 June 1925; Visakhapatnam, Andhra Pradesh
Parent: S S Appalachariar, S. Chudammal
Spouse and Children: Pushpa Alamelu Mangathyar; two *s*, one *d* (Murali, Krishna, Sandhyamani)
Address: 'Vaisakhi', A/2/41, Azad Apartments, Sri Aurobindo Marg, New Delhi 110 016, India
Tel. (011) 2619 8402–6/310 (O), (011) 2652 8582 (R), Mobile: 98681 28582
email: ssriramachari@hotmail.com

Education: Andhra Univ.: BSc 43, MBBS 48, MD 55, DSc 61.

Career: King Geroge Hospital, Vizag: 49–50; Andhra Med. Coll., Vizag: Lady Tata Scholar 50–51; Nutrition Res. Lab., Coonoor: Asst Res. Offr 51–59; All India Inst. of Mental Health, Bangalore: Assoc. Prof. 59–62; ICMR, New Delhi: Dy Dir, 62–65; Inst. of Pathology, New Delhi: Founder Dir, 65–87; Neuropathology, AIIMS: Hon. Prof. 66–67; ICMR, New Delhi: Additional Dir General 82–87, Sr Sci. INSA 89–92; Ministry of Environment and Forest: Pitambar Pant Fellow 93–97, INSA Hon. Sci. 99–2002; ICMR, New Delhi: Hon. Adviser 2002–, INSA Hon. Sci. 2006–.

Scientific Work: Nutritional pathology: Organ-wise and retinal damage by Vitamin A analogue deficiency, vitamin C deficiency, fatty liver in adults and children. Hepatic pathology: Reversibility of cirrhosis and Indian Childhood Cirrhosis. Neuropathology: Primate models of neurolathyrism, encephalopathy syndrome in children; due to environmental heat, hyperpyrexia in Central Indian cities like Nagpur, traumatic experimental cerebral oedema and reversibility in the primates, glial bio-filaments in brain tumours. Osteopathology: Rachitic healing by vitamin D and starvation. Carried out pioneering work on scientific microscopy and photomicrography resulted in the development of indigenous low-cost mass production of teaching aid and obtained seven patents in 1970s. Developed Romhanyi's recolourization technique of museum specimens.

Important Publications: **(1)** The Bhopal gas tragedy: An environmental disaster (2004) *Curr. Sci.* **86**, 7, 905–920. **(2)** Non-alcoholic fatty liver disorders (2004) *Proc. Ranbaxy Foundation Conf.: Symp. on non-alcoholic fatty liver* *disorders*. **(3)** Acute encephalopathy syndrome in children in summer (1977) *Proc. of the 11th World Congress of Neurology Amsterdam.* Excerpta Medica, International Congress Series **434**, 406–412. **(4)** Histochemical study of healing of rachitic epiphyseal cartilage of the rat induced by Vitamin-D and starvation (1958) *Ind. J. Pathol. Bacteriol.* **1**, 105–113. **(5)** Polyethylene glycols as embedding media in histochemical work (1952) *J. Clin. Pathol.* **5**, 346–359.

Memberships: Fellow: NAMS 62; INSA 76; Andhra Pradesh Acad. of Sci. 76; EMSI 2008.

Awards & Distinctions: ICMR Basanti Devi Amirchand Oration 75 • President: Neurol. Soc. of India 69 • MCI B C Roy Award 79 Silver Jubliee Award 98 • J C Bose Award 81 • AMCOSA Award 82 • Padma Shri 85 • Shakuntala Devi Baldev Singh Oration 2000 • Amir Chand Award.

Srivastava, Deepak Chandra

Elected: 1998
Position: Prof., IIT Roorkee
Specialization: Structural Geology; Fluid Inclusions
Date and Place of Birth: 10 January 1956; Barabanki, Uttar Pradesh
Parents: Chandra Shekhar and Chandra Kanti
Spouse and Children: Amita; one *s*, one *d* (Shubh, Shruti)
Address: Department of Earth Sciences, Indian Institute of Technology, Roorkee 247 667, India
Tel. (01332) 28 5558 (O), (01332) 27 5112 (R), Mobile: 97600 24767
email: dpkesfes@iitr.ernet.in, dpkesfes@gmail.com

Education: Indian School of Mines, Dhanbad: BSc Hons 75, MSc 77, MPhil 79, PhD 82.

Career: Coal India Ltd: Geologist 80–82; Univ. of Roorkee: Lecturer 82–95, Reader 95–96, Asst Prof. 96–98, Assoc. Prof. 98–2001, Prof. 2001–; Penn. State Univ., USA: Postdoc Fellow 87–89.

Scientific Work: Research spans from field-based structural geology, through the laboratory-based investigations on role of fluids in deformation, to the invention of the new methods of strain estimation. Demonstrating the potential of fluid inclusion studies in tectonics. Studies on the great boundary fault, Rajasthan, and fault-bend folds in the Appalachians establish systematic evolution in the nature of syntectonic fluids with the states of palaeostress. Field-based studies reveal that repeated sheath folding is the characteristic style of deformation in the basement rocks in Rajasthan and a late extensional phase superimposes the compressional structures in the eastern Indian shield. In recent years, has given several computer-graphics methods for strain estimation in rocks.

Important Publications: **(1)** Nonlinear least squares ellipse fitting using the genetic algorithm with applications to strain analysis (2008) *J. Struc. Geol.* **30**, 1593–1602. **(2)** The isogon rosette method for rapid estimation of strain in flattened folds (2008) *J. Struc. Geol.* **40**, 444–450. **(3)** Strain estimation from vertebrate fossils: Application of the Wellman method (2007) *Geol. Mag* **144**, 211–216. **(4)** A digital method for retrodeformation and strain estimation from bilaterally symmetric fossils (2006) *Geology* **34**, 593–596. **(5)** A rapid method for strain estimation from flattened parallel folds (2006) *J. Struc. Geol.* **28**, 1–8.

Memberships: Fellow: NASI 2004; Geological Soc. of India; Indian Geological Congress.

Awards & Distinctions: Sir Henry Hayden Medal, Mining, Metallurgical and Geological Soc. of India 77 • Indian School of Mines Medal 77 • UGC Natl Mineral Award.

Subba Rao, Bookinakere Ramakrishnaiya

Elected: 1958
Specialization: Entomology; Taxonomy of Chalcidoidea
Date and Place of Birth: 25 August 1925; Mysore, Karnataka
Parents: Ramakrishnaiya and Parvathamma
Spouse and Children: Tara; two *s*
Address: 36, Muncaster Road, London SW 11 6NU, UK
Tel. (+44-207) 223 3551 (R)
email: ragini@globalnet.co.uk

Education: Univ. of Mysore: BSc Hons 48, PhD 54, DSc 81; IARI, New Delhi: Assoc. 50.

Career: IARI, New Delhi, Dn of Entomology: Res. Fellow 50–52, Res. Asst, Asst Entomologist 55–58, Asst Prof. 58–60, Parasitologist 60–68; CAB International Inst. of Entomology, London: Principal Entomologist 68–85.

Scientific Work: Discovered and described a large number of new species to science and several of these new species have been imported by the USDA and multiplied in laboratories and released against many insect pests. *Neodusmitia sangwani* (Subba Rao) and *Aphidius smithi* (Sharma and Subba Rao), have been very successful and now considered as classic examples of biological control of insect pests and these introductions have saved the plant protection departments several million dollars a year on the use of insecticides and better crop production.

Important Publications: (1) Chalcidoidea (Insecta: Hymenoptera) of India and adjacent countries: Reviews of families and key to families and genera (1985) *Oriental Insects* 19, 163–310; 20, 1–430. (2) *A history of entomology in India* (1994) Intercept Pub., UK.

Subba Rao, Bookinkere Channakeshavaiah

Elected: 1975
Specialization: Applied Organic Chemistry; Industrial Chemistry
Date and Place of Birth: 8 December 1923; Mysore, Karnataka
Parents: B C Chennakeshavaiah and Gangamma
Spouse and Children: Uma; two *s*, one *d* (Ashok, Somesh, Sudha)
Address: Sri Ganga, No. 8, Temple Road, Jayalakshmipuram, Mysore 570 012, India
Tel. (0821) 251 0882 (R), Mobile: 99456 53703

Education: Univ. of Mysore: BSc Hons 44, MSc 46; Purdue Univ. USA: PhD 55.

Career: Mysore Univ.: Lecturer in Chem. 44–46; IISc, Bangalore, Dept of Chem.: Sr Res. Asst 46–51; IIT Kharagpur: Lecturer 51–52; Purdue Univ. Res. Asst Postdoc Fellow 52–58; NCL, Chemical Dn: Sr Sci Offr 58–64; Hico Products Ltd, Bombay: Dir of R&D 64–67; Hindustan Lever Res. Centre, Bombay: Head of Chemical Sci. 67–83.

Scientific Work: Discovery of hydroboration reaction – addition of B–H across double & triple bonds leading to a vast field of organoboranes and stereospecific synthesis of organic compounds in high yields; selective reductions of organic functional groups using complex metal borohydrids/diborane *in situ;* upgradation of non-edible oils as raw material for detergent actives; new detergent actives for conventional and unconventional raw materials, nonionic detergents tailor-made for specific end uses; utilization of ricebran wax for production of plant growth promoting cocktails (triacontanol and homologues); utilization of cashewnut shell liquid for production of high temperature solvents, detergents actives and drug intermediate analogues as well as dyes.

Important Publications: **(1)** A new powerful reducing agent – sodium borohydride in the presence of aluminium chloride and other polyvalent metal halides (1956) *J. Am. Chem. Soc.* **78**, 2582. **(2)** Hydroboration of olefins (1957) *J. Org. Chem.* **22**, 1136. **(3)** Hydroboration I (1959) *J. Am. Chem. Soc.* **81**, 6423. **(4)** Hydroboration II (1959) *J. Am. Chem. Soc.* **81**, 6428. **(5)** Hydroboration III (1959) *J. Am. Chem. Soc.* **81**, 6434.

Memberships: Fellow: Royal Inst. of Sci. • Vice-President: Indian Chemical Soc.

Subba Rao, Ganugapati Sree Rama

Elected: 1985
Specialization: Synthetic and Mechanistic Organic Chemistry; Natural Product Chemistry
Date and Place of Birth: 21 August 1937; Kolavennu, Krishna Dist, Andhra Pradesh
Parents: G Sathyanarayan and Lakshmi Narasamma
Spouse and Children: Lakshmi Sita; one *s*, one *d* (Krishna, Rama)
Address: 1A, Pradhan Apts, 16/5, 18th Cross, Malleswaram, Bangalore 560 055, India
Tel. (080) 2346 6430 (R), Mobile 98863 10603
email: gsrs@orgchem.iisc.ernet.in, gsrsrao@yahoo.com

Education: Andhra Univ.: BSc Hons 57, MSc 58, DSc 61; Univ. of Manchester: PhD 66.

Career: Andhra Univ., Waltair: Demonstrator 57–58, Res. Fellow 58–62; Univ. of Manchester, UK: Postdoc Fellow 62–67; Australian Natl Univ., Australia: Res. Fellow 67–70; IISc, Bangalore, Dept of Organic Chem.: Asst Prof. 70–75, Assoc. Prof. 75–80, Prof. 80–2000; Prof. & Chmn 82–89, Dean, Faculty of Science 95–97.

Scientific Work: Developed new strategies of synthesis of natural products using cyclohexadienes, readily available from the Birch reduction of aromatic substrates. Methodology has been used successfully for the total synthesis of several mould metabolites, which include the orsellinic acid derivatives, macrocyclic lactones, several naturally occurring sesquiterpenes having the tricyclo (6.2.1.$0^{1,5}$) undecane and tricyclo (5.2.2.$0^{1,5}$) undecane skeleton. Developed synthesis of steroid hormones, prostaglandin derivatives by using this methodology; total synthesis of diterpenes, complex xanthones and spiro(4.5)decanes. Suggested a new mechanism involving the formation and protonation of anion radicals to explain the anomalous behaviour during the Birch reduction of styrenoids. Elucidated the structures of several natural products. These include diterpenes, triterpenes, alkaloids and steroid sapogenins. Investigated application of organometallic reagents in the homogenous hydrogenation, oxidation, isomerization and related processes.

Important Publications: **(1)** Birch reduction and its application in the total synthesis of natural products (2003) *Pure Appl. Chem.* 75, 1443–1451. **(2)** Synthesis based on cyclohexadienes Part 34. A tandem cationic rearrangement-ene cyclisation route to pupukean-2-one (2000) *J. Chem. Soc. Perkin Trans.* **1**, 3714. **(3)** Tandem 5-exo-trig allyl and 3-exo-trig radical cyclisation and its rearrangement to copa and ylanga sesquiterpene skeleton (1996) *J. Chem. Soc*

Chem. Commun. 2331. **(4)** Direct conversion of 13-beta-alkylgonatetraenes into 13-beta-alkylgona-4-ene-3-ones (1994) *J. Chem. Soc., Perkin Trans.* **1**, 2331. **(5)** Chemical modifications of natural triterpenes – glycyrrhetinic and boswellic acids: Evaluation of their biological activity (2008) *Tetrahedron* 15451.

Memberships: Fellow: INSA 87; A P Acad. of Sci.

Awards & Distinctions: S S Bhatnagar Prize 82 • C V Raman Award 92 • T R Seshadri 70th Birthday Commemoration Medal 97 • INSA Golden Jubilee Medal for Chemical Sciences 2004.

Subba Rao, Gundlapalli Venkata

Elected: 1988
Position: Prof., National Univ. of Singapore
Specialization: Materials Science; Solid State Chemistry
Date and Place of Birth: 12 December 1940; Bapatla, Andhra Pradesh
Parents: G Sriramamoorty and G Charumathy
Spouse and Children: Varalakshmi; two s
Address: Department of Physics, National University of Singapore, South Kent Ridge, Singapore 117 542
Tel. (+65) 6516 2607 (O)
email: phyvsg@nus.edu.sg

Education: Sree Venkateswara Univ., Tirupati: BSc 59, MSc 62; IIT, Kanpur: PhD 70.

Career: S V College, Tirupati: Demonstrator in Chem. 59–60; Laxminarayan Inst. of Technol., Nagpur: Lecturer in Physical Chem. 62–64; IIT, Kanpur: Res. Assoc. 64–71; IBM, Thomas J Watson Res. Centre, USA: Res. Fellow 71–74; IIT, Madras, Materials Sci. Res. Centre: Vis. Asst Prof. 74–76, Asst Prof. 76–82, Head 82–83, Prof. 84–92; Univ. of Munster, Germany: Alexander von Humboldt Fellow 83–84; Argonne Natl Lab., USA 80; CECRI, Karaikudi: Dir 92–97; Natl Univ. of Singapore 88: Vis. Prof. 97–; .

Scientific Work: Achievements in general are in materials science and solid state chemistry, with emphasis on the synthesis, characterization, fabrication and study of physical and physicochemical properties of new and novel solid state materials. Specific achievements relate to electronic ceramics, use of powder metallurgical techniques for their fabrication, ternary low-temperature and high-temperature ceramic oxide superconductors, ionically conducting solids, and materials for chemically trapping solar energy and Li-ion rechargeable batteries. Deriving correlations between crystal structure and physical properties in ordered inorganic solids and alloy systems has been at the core of research.

Memberships: Fellow: INSA; Royal Soc. of Chem. 80; Am. Inst. of Chemists 84.

Awards & Distinctions: MRSI Medal 90 • INSA C V Raman Award 90 • MRSI Superconductivity Prize 91.

Subbaramiah, K*

Elected: 1939
Last Address: Test House, Alipore, Calcutta, India
***Deceased:** 1944

Education: MSc.

Career: Test House, Alipore, Calcutta.

Subbarao, Eleswarapu Chinna

Elected: 1974
Position: Chief Consulting Adviser, TCS, Pune
Specialization: Materials Science; Renewable Energy; R&D Management
Date and Place of Birth: 8 August 1928; Narsapur, Andhra Pradesh
Parents: E Sriramamurthy and Neelaveni
Spouse and Children: Kamala; one *s*, two *d* (Ram, Veni, Kanta)
Address: Tata Consultancy Services Limited, 54B, Hadapsar Ind. Estate,
Hadapsar, Pune 411 013, India
Tel. (020) 2681 2226, (020) 6608 6267 (O), (020) 6400 1227 (R), Mobile: 98509 65686
email: ec.subbarao@tcs.com

Education: BHU, Varanasi: BSc Tech 49; Univ. of Washington, USA: BS 52, MS 53; Pennsylvania State Univ., USA: PhD 57.

Career: Parry & Co. Ltd, Ranipet: Tech. Asst 49–51; US Bureau of Mines, USA: Res. Asst 51–53; Pennsylvania State Univ., USA: Res. Asst 54–55, Sprague Fellow 55–56; Westinghouse Electric Corp., USA: Res. and Fellow Engg 56–63; IIT, Kanpur, Dept of Metallurgical Engg: Assoc. Prof. 63–64, Prof. 64–81, Dean of Faculties 66–72; Interdisciplinary Programme in Materials Sc.: Convenor 71–75; Tata Res. Development and Design Centre, Pune: Founder Dir 81–99, Chief Consulting Adviser 99–.

Scientific Work: Made contributions to structure-property correlations in materials. Important examples are bismuth containing ferroelectric compounds with layer structure with high Curie temperatures; morphotropic phase boundaries in lead niobate solid solutions; defect structure and ionic conductivity in superionic conductors based on zirconia, thoria and beta alumina; martenisitic transformation in zirconia; mischmetal cobalt permanent magnets; low thermal expansion ceramics and acoustic emission.

Important Publications: **(1)** *Experiments in materials science* (1972) Mc Graw-Hill, New York. **(2)** *Science and technology of rare earth materials* (1980) Elsevier, New York. **(3)** *Solid electrolytes and their applications* (1980) Plenum, New York. **(4)** A family of ferroelectric bismuth compounds (1980) *J. Phys. Chem. Solids* **23**, 665. **(5)** Martensitic transformation in zirconia (1974) *Physica Status Solidi* **A 21**.

Memberships: Fellow: INSA 78; INAE 95; Intl Acad. of Ceramics; Indian Inst. of Ceramics.

Awards & Distinctions: National Metallurgists Day Award 70 • Homi Bhabha Award 78 • BHEL Award 82 • INSA Award in Materials Sci. 95 • Honorary Fellow, IIT Kanpur.

Subbarao, Kaigala Venkata

Elected: 1991
Position: Prof., Univ. of Hyderabad
Specialization: Volcanology; Igneous Petrology; Palaeomagnetism
Date and Place of Birth: 5 April 1942; Vegeswarapuram, Andhra Pradesh
Parents: Suryachandra Rao and Amma
Spouse and Children: Nalini; two s
Address: Centre for Earth & Space Sciences, A-18, Faculty Quarters, University of Hyderabad,
Hyderabad 500 046, India
Tel. (040) 2313 2669 (O), (040) 2313 7404 (R), Mobile: 93924 72503
email: kvsubbarao_iitb@yahoo.co.in

Education: Andhra Univ.: BSc 59, MSc 61; Sri Venkateswara Univ., Tirupati: PhD 65.

Career: Sri Venkateswara Univ., Tirupati: CSIR Res. Fellow 65–66, Lecturer 66–67; Univ. of Manitoba, Canada, Dept of Earth Sci.: NRC Postdoc Fellow 67–69, Vis. Sci. 71–73; Univ. of Alaska, USA, Inst. of Marine Sci.: Asst Prof. 69–71; IIT, Bombay, Dept of Civil Engg/Earth Sci.: Asst Prof. 73–80, Prof. 80–2005, Dept of Earth Sci.: Chmn 87–91; Univ. of Hyderabad, Centre for Earth & Space Sci.: Prof. 2005–.

Scientific Work: Showed that mantle source region of mid-Indian ocean ridge basalts was fractionated significantly late and less than those of the Atlantic and Pacific ridges. Erected a detailed Deccan lava stratigraphy for the first time, with 3 subgroups and 10 formations and established a correlation of the Deccan lava sequences over widely spaced areas using their chemical, isotopic and magnetic signatures, with its very significant tectonic implications of the Western Deccan and across the Narmada–Son lineament. Work on the precambrian alkaline complexes of India and Arabian Sea sediments has new insights.

Awards & Distinctions: Govt of India National Mineral Award 89 • TWAS Prize 2003 • Chmn: IAVCEI Working Group on Deccan Volcanism.

Subbaraya, Tippur Subbarayashastry*

Elected: 1935
Specialization: Physics and Spectroscopy
Parents: Pandit T N Subbaraya Shastry and Kaveramma
Spouse and Children: Anandalakshamma; four *s*, four *d*
Last Address: 62, EAT Road, Basavanagudi, Bangalore 560 004, India
***Deceased:** 10 April 1975

Education: Univ. of Mysore: BSc 23, MSc 33, DSc 44.

Career: Central College, Bangalore, Dept of Phys: Demonstrator 26, Lecturer 30–37, Asst Prof. 37–54; Inter College, Mysore: Lecturer 28–30; First Grade College, Tumkur: Prof. of Phys. 54–60, Principal 54–60, Emer. Prof. 60–62.

Scientific Work: Was interested in and conducted studies in higher physics (quantum mechanics, relativity) and in higher mathematics (vector analysis, dyadics, tensor analysis). Could derive Strokes theorem using tensor analysis. In later years, worked as a spectroscopist producing several original papers on the spectra of cadmium, zinc, mercury, etc.

Important Publications: **(1)** Interaction of atomic energy levels (1942) *Proc. India Acad. Sci.*, **15**, 244–249, 250–257.

Subrahmanya, Chelur Ramachandra

Elected: 1993
Position: Prof., RRI, Bangalore
Specialization: Radio Astronomy; Signal Processing; Reconfigurable Computing; Navigate Satellite Position Estimation
Date and Place of Birth: 24 November 1948; Davanagere, Karnataka
Parents: C Ramachandra Sastry
Spouse and Children: Prabha; one *d*
Address: Raman Research Institute, C V Raman Avenue, Bangalore 560 080, India
Tel. (080) 2361 1009 (O), (080) 2364 3355 (R)
email: crs@rri.res.in

Education: Bangalore Univ.: BSc Hons 68, MSc 70; Univ. of Bombay: PhD 78.

Career: TIFR, Bombay: Vis. Member 70–77, Res. Assoc. 77–79, Fellow 79–87, Reader 87; Groningen Univ., Netherlands: Sci. Offr 78, Univ. of Sydney, Australia: Res. Fellow 83–86; NCRA, Pune: Reader, Assoc. Prof., RRI, Bangalore: Prof. 99–.

Scientific Work: Proposed a new method of deconvolution and applied it for lunar occultations observed with the Ooty radio telescope. Was one of the first to recognize that the success of later techniques like the maximum entropy method was largely due to the use of *a priori* information to constrain the solution, which was done more directly in his optimum deconvolution method. Proposed a new method which seems to provide a breakthrough for imaging at low frequencies. It provides a convenient way of decoupling the ionospheric phases from other parameters in the equations, such that it can exploit the strong overlap of beams of antennae in a practical synthesis telescope. Used the observed distribution of angular sizes to verify the claims of linear size evolution made earlier on the basis of just the median values. Explored the possibility of using optical identification statistics at various flux densities for cosmological investigations. At Sydney, interests turned towards extensive observations with the MOST. The most notable is the observation of the complete sample of sources between the declinations -30 and -20 degrees. Another major survey undertaken with MOST is the deep survey in 20 independent fields in the southern sky. Has been playing a major role in the GMRT project through expertise in interferometry, software and ability to plan and guide a digital engineering project. Played a leading role in the parallel processing project control/monitor, software and correlator activities of GMRT. Is also an expert in astronomical software, both the online software related to observing with telescopes and the offline software related to various image processing and other applications. Has contributed substantially towards the software related to the Ooty radio telescope, OSRT, MOST and for the GMRT. Led the team building the GMRT corelator. Applied radio interferometric techniques to problems related to precise estimation of orbits of geosynchronous satellites likely to be useful for the Indian navigation programme.

Subrahmanyam, Nekkalapudi Chinna

Elected: 1995
Specialization: Genetics, Plant Molecular Biology; Biotechnology
Date and Place of Birth: 5 October 1943; Manthena, Andhra Pradesh
Parents: N Satyanarayana and N Anasuryavathamma
Spouse and Children: Vijayalakshmi; one *s*, one *d* (Prasad, Naveena)
Address: Unit 3, 28 Boronia Grove, Doncaster East, Victoria, 3109, Australia
Tel. (+61-3) 9842 2315 (R)
email: nnekkalapudi@australianunity.com.au

Education: BHU: BSc 66, MSc 68; Univ. of Guelph Canada: PhD 73.

Career: AP Agric. Univ.: Res. Asst 68–69; Univ. of Guelph: Res. Asst 70–73; Australian Natl Univ.: Res. Fellow 74–79; Univ. of Hyderabad: Reader 78–86, Prof. 87–2000, Dean, School of Life Sci. 92–2000; Univ. of Poona, Dept of Botany: Prof. & Head 86–87; Victorian Inst. for Dryland Agriculture, Australia: 2000–02.

Scientific Work: Discovered selective chromosomal elimination in barley following interspecific hybridization leading to haploid formation and its cytogenetic basis. Established a number of rRNA cistrons on barley chromosomes 6 and 7 and *in situ* hybridization of different barley satellite DNAs. Demonstrated the role of a specific segment in different amplification of the two rDNA repeats at different NOR loci in barley. Demonstrated cleavage of plant chromosomes by restriction endonucleases leading to their use in the development of chromosomal rearrangements. Discovered a 'hemizygous' – ineffective control of chromosome pairing in polyploid *Hordeum* unlike wheat. Provided evidence for allosyndetic recombination in *Cajanus tylosia* hybrids. Established a pattern-dependent maternal plastid inheritance and the role of normal chloroplasts and nuclear genotype in the reversion of '*mutant*' to normal plastids in pearl millet. Characterised the ultrastructural/molecular alterations in the defective plastids. Established the nature of diversity in the mitochondrial genomes among cytoplasmic male sterile lines based on RFLPs in pearl millet.

Memberships: Member: New York Acad. of Sci. 82 • Fellow: INSA 92; NAAS 93.

Subrahmanyan, Ramakrishnan*

Elected: 1956
Specialization: Marine Biology; Algology
Date and Place of Birth: 31 January 1919; Pazhayanur, Trichur, Kerala
Parents: P S Ramakrishnan and Narayani Ammal
Spouse and Children: Parvathi; one *s*, four *d*
Last Address: 71, Choolai High Road, Madras 600 112, India
***Deceased:** 5 March 2006

Education: Univ. of Madras: BSc 39, MSc 43; Univ. of Liverpool, UK: PhD 48; Univ. of Madras: Dip. in German 40, Dip. in French 42.

Career: Univ. of Madras: Res. Scholar 39–43, Res. Fellow 43–45; Govt of India: Overseas Scholar 45–48; CMFRI: Asst Res. Offr 48–59, Res. Offr 59–62, Head of Marine Biology Dn 65–71; Central Rice Res. Inst., Blue Green Algae Scheme: Botanist 62–65.

Scientific Work: Research in cytology and life history of diatoms; ecology of marine phytoplakton quantum of production and its relationship to marine fisheries resources; taxonomy of marine diatoms and Dinophyceae; role of blue green algae in nitrogen fixation in the paddy fields, its quantum and fertility build-up of rice soils. Work on the life history of diatoms necessitated important changes in the then prevelant concepts on algae. Work on phytoplankton of the Indian seas helped to assess the potential fishery resources and on the blue green algae offered a practical economic means to enrich paddy fields to get increased yield. Established two new genera, *Hornellia* with *H. marina* as the type species and *Protoeuglena* with *P. noctilucae* as the type and gave an account of their life history. Also described a species of *Ruttnera pringsheimi* (Chrysophyceae).

Subrahmanyan, Vaidyanatha*

Elected: 1934
Specialization: Biochemistry
Date and Place of Birth: 16 September 1902; Sirkazhi, Thanjavur Dist, Tamil Nadu
Spouse and Children: Saraswathi; three *s*, three *d*
Last Address: Department of Biochemistry, Indian Institute of Science, Bangalore, India
***Deceased:** 30 January 1979

Education: Univ. of Madras: BA 22; Univ. of London: DSc 27.

Career: IISc, Bangalore, Dept of Biochemistry: Res. Scholar 22–25, Lecturer 27–29, Prof., Head, Chmn 29–48; Univ. of Cambridge, UK, Biochemical Labs. 39–40; CFTRI, Mysore: Planning Offr 48–50, Dir 50–63; Natl Inst. of Sc. & Technol., Philippines: FAO Consultant 63–65; Ministry of Food, Govt of India: CSIR Emeritus Sci. 66–69; Paddy Processing Res. Centre, Tiruvarur: Project Co-ordinator, Dir 69–79.

Scientific Work: Specialized in oil productivity, treatment and utilization of sewage and solid wastes for agricultural production, and food processing and nutrition. Admirably organized the Central Food Technological Research Institute, Mysore and developed it as one of the largest and best equipped research institutions in the country, where a great deal of work has been done in areas such as the processing of cereals, pulses, oil seeds and buffalo milk, and preservation of fruits, vegetables and fish. Helped to start the paddy processing research centre which has now become a leading research centre in the field of pre- and post-harvest technology of rice and its associated products. Several findings of practical importance have emerged from the work of this centre. Among these, special mention should be made of the application of salt spray for quick ripening and increased yield of paddy, the elimination of smell and increased yield of parboiled rice and the production of oil rich bran, which has already found extensive application.

Awards & Distinctions: Royal Agricultural Soc. Medal 28 • H K Sen Medal 59 • Padma Shri 60 • Rafi Ahmed Kidwai Prize 60, 63 • Babcock-Hart Award 62 • K G Naik Medal 64.

Subramaniam, Anantharaman Parameswaran*

Elected: 1961
Specialization: Geology
Date and Place of Birth: 7 March 1921; Palghat, Kerala
Spouse and Children: Akhilandeswari; two *s*
Last Address: Airborne Mineral Surveys and Exploration, N-6, South Extension Part I, New Delhi 110 003, India
***Deceased:** 22 April 1973

Education: Univ. of Madras: BSc 40; BHU: MSc 42; Princeton Univ., USA: PhD 52.

Career: Geological Survey of India: Petrologist 56–59, Dir Western Circle 60–68; Airborne Mineral Surveys & Exploration Wing: Offr-on-Special Duty 69–73.

Scientific Work: Field observations supported by laboratory studies resulted in a re-interpretation of the genetic history of charnockites of the type area near Madras. Special interest was in metamorphic and igneous petrology (granulite faces rocks, charnockites, anorthosites, alkaline rocks and Deccan basalts), geochemistry, tectonics and genesis of sulphide ore deposits. Supervised the detailed studies on the bauxite deposits of Western India and was primarily responsible for bringing to light a large deposit of fluorspar at Amba Dongar in Baroda district of Gujarat. Made a thorough systematic study of the mineralogy and petrography of a Sithampundi Igneous Complex and was responsible for its recognition as an ultrabasic layered complex containing anorthite nearest to the theoretical composition, and unique in several other respects. Made important contributions to our knowledge of the nature, composition and petrogenesis of the charnockites of South India, showing that the 'acid' type should be regarded as charnockite proper and the others merely as associates.

Memberships: Fellow: INSA 58; Geological Soc. of London, Australia and India.

Subramaniam, M K*

Elected: 1951
Specialization: Systematics; Cytology; Genetics
Date and Place of Birth: 20 April 1909; Calicut, Kerala
Last Address: No. 40, 16th Cross, Malleswaram West, Bangalore 560 055, India
***Deceased:** 1974

Education: Univ. of Madras: BA Hons 31, MA 34, MSc 34, DSc 35.

Career: IISc, Bangalore, Dept of Biochemistry: Lecturer in Cytogenetics, Asst Prof. 53–69.

Scientific Work: Published a large number of papers in animal cytology, morphology and systematics, nervous system studies, leprosy and cytogenesis of yeasts.

Subramanian, Chirayathumadom Venkatachalier

Elected: 1955
Specialization: Mycology; Plant Pathology; Evolution
Date and Place of Birth: 11 August 1924; Ernakulam, Kerala
Parents: C M Venkatachalier and T D Parvathi Ammal
Spouse and Children: Subbalakshmi; two s
Address: No. A-8, Damayanthi Apartments, 17, South Mada Street, Nungambakkam, Chennai 600 034, India
Tel. (044) 2823 4941 (R)
email: cvsubra@vsnl.com

Education: Madras Univ.: BSc Hons 44, MA 48, PhD 48, DSc 57.

Career: Botany School, UK, The Commonwealth Mycol. Inst., UK: Postdoc Res. 50; University of Madras: Postdoc Res. 51, Sr Lecturer 51–53, Reader 53–58; Centre for Advanced Study in Botany: Prof. and Sr Prof. 64–85, Dir. 73–85; Jawaharlal Nehru Fellow 76–78; IARI, New Delhi, Plant Pathology: Prof. 58–60; Univ. of Rajasthan, Dept of Botany: Prof. and Head 60–64; Natl Univ. of Singapore, Singapore: Vis. Prof. 86–87; Univ. of Bristol, UK: Vis. Prof. 68; Central Inst. of Medicinal and Aromatic Plants, Lucknow 89; INSA Sr Sci. 89–92, Emeritus Sci. 89.

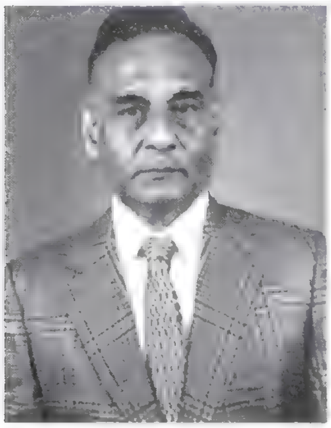
Scientific Work: Significant contributions are in fungal taxonomy, and fungal evolution and distribution, particularly of hyphomycetes and their teleomorphs. Proposed a classification of hypomycetes, built on the developmental morphology of anamorph and telemorph supported by a new terminology. Has done extensive work on soil mycology and soil-borne diseases and soil, coprophillous, litter and other ecological groups of fungi. Established and described numerous taxa from India and the tropics.

Important Publications: **(1)** *Hyphomycetes* (1971) ICAR, New Delhi. **(2)** *Hyphomycetes: Taxonomy and biology* (1983) Academic Press, London. **(3)** *Taxonomy of fungi* Part 1, (1978) Part 2, (1984) University of Madras. **(4)** *Soil Microfungi of Israel* (2001) ARA Gentner Verlag K G Ruggell. **(5)** Fungal behaviour and fungal evolution, the role of internal factors, *The Palaeobotanist* **41**, 29–35.

Memberships: Fellow: INSA 60; NAAS 95 • Hon. Corresponding Member: Belgian Royal Acad. of Foreign Sciences • President: Indian Botanical Soc. 72; Intl Mycological Assn 77–83; Mycological Soc. of India 85.

Awards & Distinctions: Pulney Andi Medal 44 • Fyson Prize 44 • S S Bhatnagar Prize 65 • Birbal Sahni Medal 72 • Rafi Ahmed Kidwai Memorial Prize 72–73 • Jawaharlal Nehru Fellowship 76 • T S Sadasivan Endowment Lecture Award 88 • E K Janaki Ammal National Award for Taxonomy 2000.

Subramanian, Dubagunta



Elected: 1972
Specialization: Plant Physiology and Pathology; Biochemistry; Microbiology
Date and Place of Birth: 4 April 1931; Atthani, Pudukkottai Dist, Tamil Nadu
Parents: Dubagunta Seshagiri Rao and Venkalakshmi Ammal
Spouse and Children: Shakuntala; two *d* (Sailakshmi, Purnima)
Address: Flat No. 401, Plot 886-890, Defence Colony, Sainikpuri, Secunderabad 500 094, India
Tel. (040) 2711 7164 (R), Mobile: 99891 87487

Education: Univ. of Madras: BSc Hons 52, PhD 57; Univ. of Wisconsin, USA: Postdoc Res. 65.

Career: Univ. of Madras: Res. Asst 57–58, ICI Res. Fellow 58–60, UGC Teacher's Training Programme: Lecturer 60–63, Centre for Advanced Study in Botany: Reader 65–77, Prof. 77–91, Indo-Res. Programme on blue green algae (biofertilizers): All India Co-ordinator 91–92; Univ of Wisconsin: Postdoc Res. 65, Project Assoc. 63–65; Univ. of Dundee: British Council Vis. Fellow 71; Long Ashton Res. Station, Bristol, Vis. Sci. 72; Sr Fulbright Fellow 85; Colombo Univ., Vis. Prof. 78–79.

Scientific Work: Established fusaric acid as a vivotoxin (first ever record of a fungal metabolite acting as a causal factor in any disease) in cotton with syndrome. The work also evaluated in great detail the role played by cell-wall degrading enzymes (pectinolytic and cellulolytic enzymes) in fungal pathogenesis, dynamics of their secretion and activity *in vivo*, particularly in the differential physiology of the pathogen in a compatible and an incompatible host. Carried out research on cell-free nitrogen fixation by *Clostridium pasteurianum,* which led to the elucidation of the role of ATP in the process. Extensive work on cyanobacterial N^2 fixaton with special reference to the role of glutamine synthebase in N^2 fixation and assimilation.

Important Publications: **(1)** Is fusaric acid a vivotoxin? (1995) *Nature, London.* **(2)** Water is deficient (1959) *A treatise in plant pathology,* Academic Press, New York. **(3)** *What is life?* (1961) Southern Language Book Trust. **(4)** Role of ATP in nitrogenase action (1965) *Biochim. Biophys. Acta.* **(5)** Biological nitrogen fixation (1967) *J. Indian Bot. Soc.*, Todla Endowment Lectures.

Awards & Distinctions: Sr Fulbright Fellow 85.

Subramanian, Sankaran

Elected: 1989
Position: Prof., Res. Sci., Natl Cancer Inst., USA
Specialization: NMR, EPR; Theoretical Chemistry; Magnetic Resonance Imaging
Date and Place of Birth: 30 March 1942; Tirunelveli, Tamil Nadu
Parents: Sangu Iyer Sankaran and Saradha
Spouse and Children: Rajalakshmi; one *s*, one *d* (Shanker, Saradha)
Address: Radiation Biology Branch, National Cancer Institute, National Institutes of Health,
9000, Rockville Pike, Bethesda, Maryland 20892, USA
Tel. (+1-301) 443 6490 (O), (+1-301) 721 0473 (R), Mobile: (+1-301) 70 41575
email: subu@helix.nih.gov

Education: Univ. of Kerala: BSc 61, MSc 63; Univ. of Leicester, UK: PhD 68.

Career: BARC, Bombay, Isotope Dn: Sci. 63–66; Univ. of Leicester, UK, Dept of Chem: Postdoc Fellow 68–69; Michigan State Univ., USA: Postdoc Fellow 69–71; IIT, Madras, Dept of Chem.: Asst Prof. 71–79, Prof. 79–98, Head, RSIC 86–91; Univ. of Mainz, West Germany: Alexander von Humboldt Fellow 79–80; Lab. of Chemical Phys., NIDDK, NIH, USA: Fogarty Vis. Sci. 85–86, Radiation Biology Branch, NCI, NIH, Bethesda, MD, USA and Dept of Radiology, USA: Vis: Prof. 93–94, Res. Sci. 98–.

Scientific Work: Worked extensively in the area of radiation damage in inorganic single crystals and identified the electronic structure of a number of halogen radicals. Discovered Cl–O–O. Studied the Jahn–Teller effect in a number of copper complexes. Worked on clathrates using EPR as probe. Developed novel one- and two-dimensional NMR techniques for the simplification of structure elucidation in polysaccahrides. Developed non-empirical NDDO Mo methods for elucidation of molecular electronic structure of small molecules. Developed RF FT EPR imaging methods for fast acquisition of EPR image data. Worked on calcium binding peptides using high resolution 2D NMR techniques. Looked at animal models of cerebral ischaemia and stroke using MRI, relaxation and *in vivo* spectroscopy. Currently working on developing multi-modality functional imaging using EPR and MRI for radiation treatment of cancer.

Important Publications: (1) *Modern techniques in high resolution FT-NMR* (1987) Springer-Verlag, New York. (2) Radio frequency continuous-wave and time-domain EPR imaging and Overhauser-enhance magnetic resonance imaging of small animals: instrumental developments and comparison of relative merits for functional imaging (2004) *NMR Biomed.* 17, 5, 263–294. (3) High-speed data acquisition system and receiver configurations for time-domain radiofrequency electron paramagnetic resonance spectroscopy and imaging (1999) *J. Magn. Reson.* 137, 379. (4) Sensitivity enhanced heteronuclear shift correlation spectroscopy (1986) *J. Magn. Reson.* 67, 569. (5) Time-domain radio frequency EPR imaging (2003) *Biol. Magn. Reson.* 18, 153–197.

Memberships: Fellow: INSA 90.

Awards & Distinctions: Intl EPR (ESR) Soc., Silver Medal in Instrumentation 2000.

Subramanian, Toppur Seethapathy*

Elected: 1948
Specialization: Biochemistry
Date of Birth: 24 September 1911
Last Address: Sankaran, 116, Kutchery Road, Mylapore, Madras 600 004, India
***Deceased:** 19 September 1987

Education: Univ. of Madras: BA; BHU, Varanasi: MSc; Univ. of Liverpool: PhD, DSc.

Career: Liverpool Med. Res. Org.: Res. Chemist 37–38, Res. Asst, Lecturer in Organic Chem. 39–41; Imperial Chem. Industries: Sr Res. Chemist 41–44; Ordinance Labs, Cawnpore 44; Ahmedabad Textile Industries Res. Assn: Dir 57–65; Indian Jute Mills Assn Res. Inst., Calcutta: Dir 65–69.

Scientific Work: Worked on several aspects of organic and inorganic insecticides and fungicides. Synthesis of Rotonone, Toxicarol, Sumatol, etc. were given field trials. Discovered one of the processes of making DDT and was a member involved in the discovery of gamaxine. At Kanpur, worked on bio-degradation of tentage materials, algicides, fungicides and insecticides and problems of defence forces such as high elevation kits. Created a physiology department to study the environment and surroundings of army men posted in places of extreme weather. At ATIRA, concentrated on cotton fibre technology.

Subramanyam, Krishnaier*

Elected: 1959
Specialization: Comparative Embryology and Morphology of Angiosperms; Taxonomy; Biosystematics; Cytology; General Botany
Date and Place of Birth: 1 November 1915; Bangalore
Parents: K S Krishna Iyer and Thangammal
Spouse and Children: Shantha; two s
Last Address: 55/3, First Main Road, Tata Silk Farm, Basavangudi, Bangalore 560 004, India
***Deceased:** 17 April 1980

Education: Univ. of Mysore: BSc Hons 39, MSc 40, DSc 50; Univ. of Cornell, USA: PhD 55.

Career: Central College, Univ. of Mysore, Dept of Botany: Lecturer 40–56; Botanical Survey of India, Coimbatore: Regional Botanist 56–60; Botanical Survey of India, Calcutta: Dy Dir 60–64, Jt Dir 64–68, Dir 68–73.

Scientific Work: Impact of embryology on taxonomy has been significant and resulted in a better understanding of the relationships between families and genera of dubious systematic position. Studied in detail the comparative embryology of a number of members of *Campanulaceae*, *Lobeliaceae* and *Stylidiaceae*. The embryological studies have shown that whatever may be the superficial resemblances between these families, the differences in their embryological characters are pronounced. Detailed taxonomic and morphological studies of the Indian *Utricularia* were taken up. Practically, populations of all the species occurring in various parts of India had been collected and were being studied in detail from the point of view of taxonomy, distribution, cytology, leaf venation, trap structure, vegetative and floral anatomy.

Memberships: Fellow: Indian Botanical Soc.; INSA 80.

Awards & Distinctions: Viswambhar Puri Gold Medal 78.

Subramanyam, Somenahalli Venkatesarao

Elected: 1991
Specialization: Condensed Matter Physics; Low Temperature Physics; High Pressure Physics; Carbon Films; Conducting Polymers
Date and Place of Birth: 3 September 1943; Nangli, Kolar Dist, Karnataka
Parents: Somenahalli Venkatesa Rao and Kamalamma
Spouse and Children: Lalitha; one *s*, two *d* (Vinay, Veena, Suma)
Address: No. 1, 8th Main, Sharada Colony, Basaveshwara Nagar, Bangalore 560 079, India
Tel. (080) 6535 5051 (R), Mobile: 98866 43207
email: svs@physics.iisc.ernet.in; svs1943@hotmail.com

Education: Mysore Univ.: BSc 62, MSc 64; IISc, Bangalore: PhD 69.

Career: National College, Bangalore: Lecturer 64–65; IISc, Bangalore: Res. Scholar 65–68, Natl Inst. of Sci. Fellow 69, Lecturer 70–76, Asst Prof. 76–81, Assoc. Prof. 81–86, Prof. 86–2006, MSIL Prof. 93; Oxford Univ. Clarendon Lab., UK: Commonwealth Academic Staff Fellow 72–73.

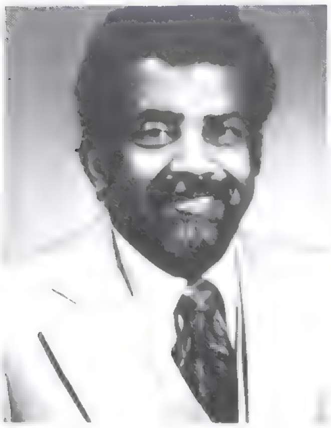
Scientific Work: Contributions in the field of quasi one-dimensional conductors at high pressures and low temperatures; pronounced nonohmic conduction, charge density wave propagation and electrical switching with memory in these materials. Made a detailed study of the transport in conducting polymers at low temperatures. Tunnel transport in a disordered polaronic system like polypyrrole was observed for the first time. High conducting films of carbon prepared have the unusual property of nearly temparature independent conductivity over a wide range of temparature. Miniature high pressure cells designed have become a standard. They are useful at pressures up to 10 GPa, temperatures down to 1 K and magnetic fields up to 8 Tesla. Studied thermal expansion of irradiated polymers for the first time and indigenously developed (in collaboration with BARC) a closed cycle cryorefrigerator to produce 2.5 W refrigeration at 20 K.

Important Publications: **(1)** *A two stage Gifford–NcMahon cycle cryorefrigerator operating at* 20K (1986) **26**, 547. **(2)** Miniature high pressure cell for transport property measurements down to 2K (1990) *Rev. Sci. Instrum.* **61**, 1336–1338. **(3)** Contribution of polarons and bipolarons to low temparature conductivity in doped polypyrrole (1991) *Phys. Rev.* **1343**, 4236–4243. **(4)** Synthesis of crystallites of carbon nitride in amorphous carbon (2002) *Int. J. Mod. Phys.* **16**, 1148–1153. **(5)** Metallic conductivity of amorphous carbon under high pressure (1997) *Appl. Phys. Lett.* **71**, 632–634.

Memberships: Fellow: Indian Assn of Physics Teachers.

Awards & Distinctions: Mysore Univ. Jubilee Prize 64 • IISc Jaya-Jayant Award for Teaching Excellence.

Sudarshan, Ennackal Chandy George



Elected: 1963
Position: Prof., Univ. of Texas, USA
Specialization: Group Representations; Quantum Optics; Elementary Particle Physics; Quantum Field Theory and Quantum Mechanics; Quantum Computing and Statistical Mechanics
Date and Place of Birth: 16 September 1931; Pallam, Kottayam, Kerala
Spouse and Children: G Bhamathi; three s (Pradip, Arvind, Ashok)
Address: Department of Physics, University of Texas, Austin, Texas 78712, USA
Tel. (+1-512) 471 5229 (O), (+1-512) 834 1722 (R)
email: sudarshan@utaphy.ph.utexas.edu, sudarshan@physics.utexas.edu

Education: Univ. of Madras: BSc Hons 51, MA 52; Univ. of Rochester, USA: PhD 58.

Career: Madras Christian College: Demonstrator and Resident Tutor in Phys. 51–52; TIFR, Bombay: Res. Asst 52–55; Univ. of Rochester, USA: Teaching Asst 55–57, Asst Prof. 59–61, Assoc. Prof. 61–63; Harvard Univ., USA: Corporation Fellow 57–59; Syracuse Univ., USA: Prof. and Dir. of Res. Programme in Elementary Particles 64–69; Univ. of Texas, USA: Prof. 69–, Dir, Centre for Particle Theory 70–91; IISc, Bangalore: Sr Prof., Centre for Theoretical Studies 72–84; Univ. of Berne, Switzerland: Prof. 64–65; Univ. of Madras: C V Raman Distinguished Vis. Prof. 72–73; Chalmers Univ. of Goeteborg, Sweden: Jubilems Prof.; Rice Univ. of Houston, USA: Distinguished Vis. Scholar; IMSc, Madras: 84.

Scientific Work: Early work was on the nature of weak interactions. Discovered the chiral V-A theory of weak interactions and enabled the next step of unification into the standard model. Made the first use of broken symmetry (with Marshak and Okubo) in formulating the sum rules for electromagnetic properties of hadrons, a discovery which was generalized into the Gell–Mann–Okubo formula. With Currie and Jordan, formulated relativistic Hamiltonian theories of particle interactions and proved that if the particle trajectories are world lines, there can be no interaction. Did extensive work on quantum optics and proved the important theorem on the equivalence of quantum and semi-classical descriptions of optical coherence into a quantum electrodynamic framework. Work (together with Chiu and Gorini) on generalized quantum mechanics is the first example of a quantum theory with analytic continuation of the state space. Worked with Imbo on the general theory of exotic statistics for particles and excitations.

Memberships: Fellow: American Physical Soc. 62; INSA 73; TWAS 86.

Awards & Distinctions: Univ. of Wisconsin, USA, DSc (hc) 69 • Univ. of Delhi, DSc (hc) 73 • Padma Bhushan 76 • Assn of Indian in US Honors Award 76 • INSA Satyendranath Bose Medal 77 • Kerala State SdT Medal 80 • Burdwan 89 • Univ. of Calcutta Sarvadikari Medal 93 • CUSAT, Kerala 93.

Sukh Dev

Elected: 1974
Position: Vis. Prof., B R Ambedkar Centre for Biomedical Res., Univ. of Delhi
Specialization: Organic Chemistry
Date and Place of Birth: 17 June 1924; Chakwal, Punjab
Parents: Hari Chand Lala and Maya Vanti
Spouse and Children: Shashi Prabha; one *s*, two *d* (Deepak, Indu, Purnima)
Address: C-600, New Friends Colony, New Delhi 110 065, India
Tel. (011) 2684 7119 (R)

Education: Panjab Univ.: BSc Hons 44, MSc 45; IISc, Bangalore: PhD 48, DSc 60.

Career: IISc, Bangalore: Res. Assoc. 46–50, NIAS Sr Fellow 51–53, Lecturer in Organic Chem. 53–57, 58–59; MIT Boston, USA: Postdoc Res. 50; Univ. of Illinois, USA: Res. Assoc. 57–58; NCL, Pune, Dn of Organic Chem.: Head 60–74; Stevens Inst. of Technol., USA, Chem. Dept: Vis. Sci. 68; Univ. of Georgia, USA, Chem. Dept: Vis. Prof. 69; Univ. of Oklahoma, USA, Chem. Dept: Vis. Prof. 70–71, UGC Vis. Prof. 73; Malti-Chem. Res. Centre, Baroda: Dir 74–88; IIT, New Delhi, Dept of Chem.: INSA S N Bose Res. Prof. 88–93; Vis. Prof., B R Ambedkar Centre for Biomedical Res., Univ. of Delhi.

Scientific Work: Enunciated the absolute stereochemistry biogenetic rule. Determined the structures of several new components of lac resin, and of the major backbone polymer of lac; isolated and characterized the hypolipaemic compounds of the crude Ayurvedic drug *Commiphora mukul*, which led to the development of a modern drug; exploited new carene chemistry for commercially feasible synthesis of several chiral molecules of commercial interest; new chemistry of longifolene and isolongifolene led to the concept of steric diversion and new aroma chemicals; discovered several new reactions with polyphosphoric acid; devised new routes to azulenes and tropolones; pioneered studies of organic reactions in solid matrix; introduced the use of chromic acid for oxidative work-up of ozonides, thiourea for reductive cleavage of olefin ozonolysis products, titanium tetrachloride for thioacetalization; and pioneered use of silver nitrate-silica gel for olefin chromatography.

Important Publications: **(1)** Zerumbone, a Monocyclic Sesquiterpene Ketone, (1956) *Chem. & Ind.* 1051. **(2)** Thin-layer Chromatography of Olefons, (1963) *J. Chromatog,.* **12**, 189. **(3)** Bakuchiol, a Novel Meroterpenoid, (1966) *Tetrahedron Lett.* 4561. **(4)** A New Class of Triterpenoids fro Ailanthus malabarica DC, Derivatives of Malabaricane, (1967) *Tetrahedron Lett.* 4837. **(5)** Steric Diversion-I, Addition of Halogens and Pseudohalogens to Isolongifolene, (1977) *Tetrahedron* **33**, 2441.

Memberships: President: Indian Chemical Soc. 78, 79; President: IUPAC Organic Chem. Dn 87–89 • Fellow: INSA 68; TWAS 91 • Member: American Chemical Soc., Indian Chem Soc.

Awards & Distinctions: IISc Sudborough Medal 49 • Guha Res. Medal 58 • S S Bhatnagar Award 64 • Acharya P C Ray Memorial Medal 70 • Ernest Guenther Award, American Chemical Soc. 80 • IISc Distinguished Alumni Award 80 • VASVIK Award 80 • FICCI Award 80 • Meghnad Saha Medal 87 • TWAS Award 88 • S Ramanujan Birth Centenary Award 92.

Sukhatme, Pandurang Vasudeo*

Elected: 1939
Specialization: Applied Statistics; Nutrition
Date and Place of Birth: 27 July 1911; Budh, Satara, Maharashtra
Parents: Vasudeo Hari Sukhatme and Satyabhama Kulkarni
Spouse and Children: Inudumati Deval; three *s*, one *d*
Last Address: Biometry Health & Nutrition, Interdisciplinary School of Health Sciences, University of Poona, Pune 411 007, India
***Deceased:** 28 January 1997

Education: Univ. of Bombay: BSc 32; Univ. of London: PhD 36, DSc 39.

Career: All Indian Inst. of Hygiene, Calcutta: Asst Prof. of Vital Stats 39–40; Indian Agri. Res., New Delhi; Statistical Adviser 41–51; Iowa Univ., USA: Res. Prof. 51–52; FAO/UN, Statistics Dn: Dir 51–71; Univ. of California, USA: Regents Prof. 71–72; Gokhale Inst. of Politics & Economics: Emeritus Sci. 71–72; MACS, Pune: Hon. Prof. of Head, Dept of Biometry: 72.

Scientific Work: Developed the theory of non-sampling errors. Also made statistical designs for developing hybrid varieties. Wrote a book on world's hunger, which helped to destroy the myth that two-thirds of the world is hungry and malnourished and showed that diet and disease are the basic components of health but between the two, the latter is more important for rural development. Also showed that behaviour of man has its origin in the mind-brain interaction under a sustained change in external environment and therefore the key to transforming man and society lies in improving communication through education with yoga as its spearhead so that man can develop into a citizen who is responsible to the society and nation at large.

Important Publications: **(1)** A contribution to the problem of two samples (1935) *Proc. Indian Acad. Sci.* **A2**, 584–604. **(2)** *Experimental survey for estimating the outturn of wheat, Punjab*, 1943–44 (1948) Govt of India Press, Calcutta, pp. 1–68. **(3)** The world's hunger and future needs in food supplies (1961) *J. Roy. Stat. Soc.* **A124**, 463–525. **(4)** *Feeding India's growing millions* (1965) Asia Pub. House, Bombay. **(5)** The proteind problem: Its size and nature (1974) *J. R. Stat. Soc.* **A137**, 166–169.

Memberships: Fellow: INSA 43; Royal Statistical Soc.; NASI; Maharashtra Acad. of Sci.; Indian Soc. for Medical Statistics • President: Indian Soc. of Agri. Statistics; NAAS • President: Int. Assn of Survey Statisticians 77–79.

Awards & Distinctions: Royal Stat. Soc. Guy Medal 63 • ISCA B C Guha Memorial Lecture Prize 65 • Padma Bhushan 73 • IARI Lal Bahadur Shastri Memorial Lecture Award 77 • UGC Hari Om Ashram Trust Award 83 • Indian Soc. of Agr. Stat. 91 • ISCA P C Mahalanobis Award 94.

Sukhatme, Suhas Pandurang

Elected: 1986
Position: Prof., Emeritus, IIT Bombay
Specialization: Heat Transfer; Solar Energy
Date and Place of Birth: 5 November 1938; Baroda, Gujarat
Parents: P V Sukhatme and Indumati
Spouse and Children: Shobha; two *s* (Gaurav, Jai)
Address: 2-A/8-C, Anjaneya Co-op. Housing Soc., Orchard Avenue, Opp. Hiranandani Foundation School,
Powai, Mumbai 400 076, India
Tel. (022) 2570 1052 (R)
email: spsiitb@yahoo.co.uk

Education: BHU: BSc (Engg) 58; Massachusetts Inst. of Technol., USA: SM 60, Mech. E 61 & ScD 64.

Career: MIT, USA: Res. Asst 59–64; Dynatech Corporation, USA: Staff Engineer 64–65; IIT Bombay, Mechanical Engg Dept: Asst Prof. 65–70, Prof. 70–2000, Head 73–75, Dy Dir 83–85, Dir 95–2000, Prof. Emeritus 2001–; Iowa State Univ., USA: Vis. Prof. 82–83; Atomic Energy Regulatory Board: Chmn 2000–05.

Scientific Work: Contributed significantly to studies in heat transfer during condensation of liquid metal vapours and refrigerant vapours; convective heat transfer in internal and external flows; heat transfer in thermal insulation; heat transfer from fin arrays, and thermodynamic and transport properties of various fluids and their mixtures. Also been active in the area of thermal applications of solar energy.

Important Publications: **(1)** Predicting the properties of mixtures of R22 and R12, Part I: Thermodynamic properties, Part II: Transport properties (1975) *ASHRAE Trans.* **81**, 1, 266–294. **(2)** *The thermal conductivity of liquid mixtures, industrial and engineering chemistry fundamentals* (1978) **17**, 321–325. **(3)** Heat transfer from rectangular plates inclined at different angles of attack and yaw to an air stream (1985) *J. Heat Transfer,* Trans ASME, **107**, 307–312. **(4)** Influence of free convection on heat transfer during laminar flow in tubes with twisted tapes (1991) *Exptl Thermal and Fluid Science* **4**, 577–586. **(5)** Heat transfer during film condensation of R123 vapour on horizontal integral fin tubes (1996) *J. Enhanced Heat Transfer* **3**, 147–164.

Memberships: Fellow: INAE 87; INSA 95; NASI 99; Maharashtra Acad. of Sci.; Indian Cryogenics Council; Indian Soc. for Heat and Mass Transfer; Solar Energy Soc. of India, Indian Soc. for Technical Education.

Awards & Distinctions: Prince of Wales Gold Medal 58 • S S Bhatnagar Award 83 • BHU DSc (hc) 2001 • Padma Shri 2001.

Sukumar, Raman

Elected: 2000
Position: Prof., IISc, Bangalore
Specialization: Wildlife Ecology; Forest Ecology; Climate Change
Date and Place of Birth: 3 April 1955; Madras, Tamil Nadu
Parents: S Raman and Seethalakshmi
Spouse and Children: Sudha; two *d*
Address: Centre for Ecological Sciences, Indian Institute of Science, C V Raman Avenue,
Bangalore 560 012, India
Tel. (080) 2360 0382, 2293 3102 (O), (080) 2362 0939 (R), Mobile: 94482 75600
email: rsuku@ces.iisc.ernet.in; URL: http://ces.iisc.ernet.in/rsukumar

Education: Univ. of Madras: BSc 77, MSc 79; IISc: PhD 85.

Career: IISc: Sci. Offr 86–88, Lecturer 88–91, Asst Prof. 91–97, Assoc. Prof. 97–2003, Prof. 2003–.

Scientific Work: Research in the lab spans the following broad topics. Wildlife ecology: Asian elephant ecology and management, population dynamics, wildlife-human conflict. Tropical forest ecology: Diversity, structure and dynamics of tropical forests, conservation of tropical forests. Climate change: Reconstructing quaternary climate change, assessing impacts of future climate change on forests and biodiversity.

Important Publications: **(1)** The Asian elephant: Ecology and management (1989) *Cambridge Studies in Applied Ecology and Resource Management*. Cambridge University Press. **(2)** *The living elephants: Evolutionary ecology, behaviour and conservation,* Oxford University Press, New York. **(3)** Ecology of the Asian elephant in southern India. II. Feeding habits and crop raiding patterns (1990) *J. Trop. Ecol.* **6**, 33–53. **(4)** A d13C record of late quaternary climate change from tropical peats in southern India (1993) *Nature* **364**, 703–706. **(5)** Parasite abundance and diversity in mammals: Correlates with host ecology (1995) *Proc. Natl Acad. Sci. USA* **92**, 8945–8949.

Memberships: Fellow: INSA 2005.

Awards & Distinctions: Order of the Golden Ark, The Netherlands 77 • Presidential Award of Chicago Zoological Soc. 92 • Whitley Gold Award for International Nature Conservation, UK 2003 • T N Khoshoo Memorial Award for Conservation of Science, India 2004 • UGC National Swami Pranavananda Saraswati Award in Environmental Science and Ecology 2006 • International Cosmos Prize, Japan 2006 • Commendation by the Prime Minister for contribution to the Intergovernmental Panel on Climate Change (IPCC) that shared the Noble Peace Prize 2007.

Sundar, Chakram Sampathkumaran

Elected: 1999
Position: Director, Materials Science Group, IGCAR, Kalpakkam
Specialization: Condensed Matter Physics and Materials Science; Experimental Techniques of Positron Annihilation Spectroscopy; Infrared Spectroscopy
Date and Place of Birth: 23 June 1952; Chennai, Tamil Nadu
Parents: C R Sampath Kumaran and S Vasantha
Spouse and Children: A Bharathi; two s (Srivatsan, Deepak)
Address: Materials Science Group, Indira Gandhi Centre for Atomic Research, Kalpakkam 603 102, India
Tel. (044) 2748 0069, (044) 2748 0081 (O), (044) 2748 1192 (R), Mobile: 97905 22807
email: css@igcar.gov.in

Education: Univ. of Delhi: BSc Hons 71, MSc 73; BARC Training School: 74; Univ. of Madras: PhD 84.

Career: IGCAR, Sci. Offr Mater. Sci. Dn 74–; Univ. of Missouri- Kansas City, USA: Postdoc Fellow 88–90, Vis. Prof. 97.

Scientific Work: Major research contributions have been on the use of positron annihilation spectroscopy in materials science, in particular in the studies on atomic defects and investigations of phase transitions in novel materials. Significant work pertains to the use of positron annihilation spectroscopy, a local probe of electron density, to probe the superconducting transition in oxide superconductors. Other research contributions include investigations of structural transformations in fullerenes, induced by variations in temperature and pressure, and infra-red spectroscopy studies of vibrational and low energy excitations of novel materials that include superconducting materials and manganites.

Important Publications: **(1)** Linear relationship between magnetic hyperfine field and electric field gradient at Mn sites in lanthanum strontium manganite (2004) *Phys. Rev.* **B70**, 22405 (R). **(2)** Pressure induced polymerisation of fullerenes: A comparitive study of C60 and C70 (1996) *Phys. Rev.* **B53**, 8180. **(3)** Positron annihilation spectroscopy in materials science (1994) *Bull. Mater. Sci.* **17**, 1215. **(4)** Positron annihilation studies on the Bi-Sr-Ca-Cu-O superconductor (1991) *Phys. Rev.* **B43**, 13019. **(5)** Positron distribution in understanding annihilation characteristics across T_c in high temperature superconductors (1990) *Phys. Rev.* **B42**, 10199.

Memberships: Fellow: NASI 2001 • Member: Scientific Advisery Committee, UGC-DAE-CSR, 2005–08, 2009–12; Board of Studies in Physics; Homi Bhabha National Institute; Programme Advisery Committee on Condensed Matter Physics and Materials Science 2007; DST Nano Science Advisery Group 2007.

Awards & Distinctions: MRSI Medal 94 • MRSI-ICSC Superconductivity & Materials Science Annual Prize 2007 • Tamil Nadu Science & Technology Award 2007.

Sundara Raj, B*

Elected: 1956
Specialization: Fisheries
Date of Birth: 1888
Last Address: The Anchorage, Kottur, Madras 600 025, India
***Deceased:** 22 January 1974

Education: Univ. of Madras: MA; Univ. of Liverpool: PhD 23.

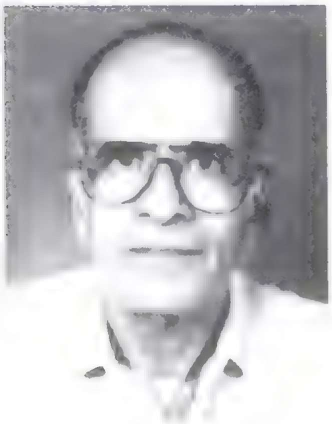
Career: Fisheries Dept, Madras: Dir 23–40; Southern Army: Liaison Offr 43–44; Dept of Food, Govt of India: Fisheries Developing Offr, UP & Addl Dir of Fisheries 44–50; Govt of Ceylon, Dept of Fisheries: Fisheries Adviser 51–54.

Scientific Work: Conducted the record pearl fisheries for all British and subsequent periods (1926–28); first to achieve the hatching of hilsa eggs; established commercial food fish fisheries in Mettur and Ooty lakes and in Kumaon, UP; discovered and established the medicinal fish liver oil industry; first to compile and publish statistics of fish landings; discovered a new genus *Lepidopygopsis* of the Tibetan group of fishes Schizothoracinae in Periyar lake.

Memberships: Fellow: Asiatic Soc.; INSA 35; Br. Assn for Advancement of Sci.; Zoological Soc. of India.

Awards & Distinctions: Diwan Bahadur.

Sundaram, Anantharaman Kalyana*



Elected: 1965
Specialization: Electrochemistry – Polarography, Solvent Extraction and Thermal Analysis
Date and Place of Birth: 10 May 1925; Tanjore, Tamil Nadu
Parents: Anantharaman and Avayambal
Spouse and Children: Mitreyi; one *s*, one *d*
Last Address: 3/131, Sindhi Society, Chembur, Bombay 400 071, India
***Deceased:** 27 January 1994

Education: Univ. of Madras: BSc 45; BHU, Varanasi: MSc (German), MSc 48; Univ. of Bombay: PhD 62.

Career: Indian Inst. of Sugar Technol., Kanpur: Res. Asst 49–51; AEC.: Asst Chemist 51–53; Univ. of Minnesota, USA: Teaching Asst 53–54; BARC, Bombay: Sci. Offr 54–85, Head of Electrochemistry Sec. 72–85.

Scientific Work: Established methods of polarographic evaluation of irreversible processes. Carried out significant studies in electrical double layer and in electrode kinetics. The other notable contribution to electrochemistry was in corrosion studies. In the field of solvent extraction, a modified regular solution theory was proposed and extensive work was carried out on synergism in the extraction of metals. Application of thermoanalytical techniques to the study of solid state reactions was another area where extensive contributions were made. Team was the first to suggest the extension of the popular method of Borchardt and Daniels to DTA curves for solid state reactions. Interested in computer-aided modelling of reactions using thermoanalytical data and refinement of methods of analysis.

Memberships: Fellow: Royal Inst. of Chemistry; Inst. of Chemists; NASI; Indian Thermal Analysis Soc. • President: Indian Thermal Analysis Soc.

Sundaram, Chokkanathapuram Venkataraman*

Elected: 1974
Specialization: Extractive Metallurgy of Rare Metals; Metallurgical Thermodynamics; Special Materials Development
Date and Place of Birth: 7 November 1929; Ottapalam, Kerala
Parents: C S Venkatarama Iyer and Alamelu
Last Address: National Institute of Advanced Studies,
Indian Institute of Science Campus, Bangalore 560 012, India
***Deceased:** 15 August 2008

Education: Univ. of Madras: BSc Hons 49; IISc, Bangalore: DIISc 52.

Career: IISc, Bangalore: Sr. Res. Asst 52–56; BARC, Bombay: Jr Res. Offr 56–59; Group Leader Metallurgy Dn 59–64, Head, Extractive Metallurgy Section 64–75, Head, Metallurgy Dn 75–82; Indira Gandhi Centre for Atomic Res., Kalpakkam: Dir 82–89; Natl Inst. of Advanced Studies, Bangalore: Homi Bhabha Vis. Prof. 91.

Scientific Work: Has made outstanding contributions to the development of detailed flowsheets for the extraction of rare metals like zirconium, hafnium, titanium, thorium and beryllium. The group has been responsible for ushering in an era of production of rare, reactive and refractory metals with indigenous capabilities and expertise, with important consequences to the atomic energy programme and other sectors of advanced engineering. The work led to the establishment of production plants for nuclear grade zirconium sponge metal, pure niobium and tantalum metal, and a pilot plant for the titanium sponge metal at the Nuclear Fuel complex, Hyderabad. Another major contribution has been the successful development of beryllium metal for space applications. Co-ordinated the development and project activities for the successful commissioning of the liquid-sodium cooled, plutonium fuelled fast breeder test reactor.

Memberships: Fellow: INSA 79; INAE • President: Minerals, Metals and Materials Soc., USA; Indian Inst. of Metals.

Awards & Distinctions: IIM Kamani Gold Medal 66 • National Metallurgists Day Award 70 • VASVIK Award 79 • IISc Platinum Jubilee Distinguished Alumnus Award 84 • Sanjay Gandhi Award 85 • INSA Syed Hussain Zaheer Medal 85–86 • Padma Bhushan 86.

Sundaram, Krishna*

Elected: 1974
Specialization: Radiation Biology; Nuclear Medicine; Immunology
Date and Place of Birth: 28 October 1926; Kollengode, Kerala
Spouse: Parvathy; one *s*, one *d* (Ravi, Hema)
Last Address: 3E, Lakeshore Manor, Gangadhara Chetty Road, Bangalore 560 042, India
***Deceased:** 20 May 2008

Education: Univ. of Bombay: MBBS 49, MD 53.

Career: BARC, Bombay: Sci. Offr 57–86, Bio-Medical Group: Dir 71–86; IAEA, Vienna: Dir Dn of Life Sci. 79–82.

Scientific Work: Studied mammalian radiobiology, immunology, cancerology and radiation medicine. Work on the etiological factors associated with toxaemia of pregnancy implicating mineralocorticoids, later identified as aldosterone, a causative factor in fluid retention and hypertension, has received international recognition. Was perhaps the first in the country to apply exfoliative cytology techniques in the diagnosis of cancer and prognosis in radiotherapy. Original work on the predisposing factors in the development of oral cancer in experimental animals highlighted the importance of nutritional deficiencies of protein and B group vitamins in the etiology. Demonstrated in experimental animals that developing gonads are very highly sensitive to radiation damage leading to permanent sterility. Showed, for the first time, the inter-relationship between radiation sensitivity and cancer development and that though radioprotective chemicals can reduce immediate mortality, the risk of those survivors to the development of cancer is enhanced. These observations are of great importance to the current concepts of chemical radiation protection and the somatic mutation theory in carcinogenesis. Has also studied the basic mechanism in immunology, especially in cell-mediated immunity.

Memberships: Fellow: Maharashtra Acad. of Sci.; INSA 75 • Founder Chmn: Soc. of Nuclear Medicine • President: Environmental Mutagen Soc. of India; Assn of Med. Physicists of India; Member: UN Sci. Effects of Atomic Radiation 72–86.

Awards & Distinctions: Univ. of Bombay Prince of Wales Gold Medal and Fellowship 53.

Sundaram, Subramania

Elected: 1965
Specialization: Textile Technology; Chemical Plant and Synthetic Fibre Technology.
Date and Place of Birth: 15 August 1930; Thiruvalangadu, Tamilnadu
Parents: R Subramaniam and Gomati
Spouse and Children: Kamakshi; two *s* (Chander, Dilip)
Address: 3B, Raghava Apartments, 41C (New No. 66), Beach Road,
Kalakshetra Colony, Chennai 600 090, India
Tel. (044) 2490 1565 (R), Mobile: 94440 51565
email: sundaram.chennai@gmail.com

Education: BSc, BSc Tech, MSc Tech.

Career: Binny Limited, India: Sr Executive 54–69; DCM Group: Group Processing Manager 69–74; State Org. for Textile Industries, Ministry of Industry, Iraq: Consultant and Adviser 74–76; Textile Group, Indonesia: Consultant and Tech. Dir 76–80; Sundaram Consultancy Services, Bombay 80–.

Scientific Work: Involved extensively in pollution control systems in the textile industry. Published more than 100 papers in international journals on textile chemistry, textile technology and management. Unique honour of working with C V Raman on the subject of physiology of colour vision. Evolved and conducted programmes for India and the developing countries on maintenance management, strategy, management development; acted as evaluation mission Leader for several UN sponsored projects in several countries.

Memberships: FRSC (London); FTI (Manchester)

Awards & Distinctions: UNDP Projects Consultant Evaluator – For Citi Bank, World Bank, USAID, etc. Adviser to Ministry of Industry, Govt of India; Currently Project Adviser for Textile and Chemical Projects to Birla Group, Tata Group, Mafatlal Group, etc.

Sundararajan, Govindan

Elected: 1992
Position: Dir, ARCI, Hyderabad
Specialization: Surface Engineering, Development of Novel Coating Technologies,
High Temperature Deformation; Fracture and High Strain Rate Deformation; Ballistic Penetration
Date and Place of Birth: 11 December 1953; Srivilliputtur, Tamil Nadu
Parents: A T Govindan and Sita
Spouse and Children: Leela; one *s*, one *d* (Aditya, Aarthi)
Address: International Advanced Research Centre for Powder Metallurgy &
New Materials (ARCI), Balapur P.O., Hyderabad 500 005, India
Tel. (040) 2444 3167, (040) 2444 3571 (O), (040) 2717 6029 (R), Mobile: 94901 17167
email: gsundar@arci.res.in, director@arci.res.in; URL: www.arci.res.in

Education: IIT Madras: BTech 76; Ohio State Univ., USA: MS 79, PhD 81.

Career: Ohio State Univ., USA: Graduate Res. Assoc. 77–81, Postdoc Res. Assoc. 82; DMRL, Hyderabad: Sci. 82–94; Centre for Processing of Laser Materials: Chief Project Offr 95; ARCI, Hyderabad: Dir 97.

Scientific Work: During the course of research career at DMRL and ARCI, has made outstanding contributions to the areas of tribological behaviour (erosion, sliding wear, abrasion) of metallic materials, composites and coatings, high temperature deformation and fracture behaviour of superalloys and other materials, laser surface modification (surface alloying cladding, transformation hardening) and laser materials processing (cutting, drilling and welding) of engineering materials, development of thermal spray coatings for the Kaveri engine programme and towards the development of novel coating technologies like detonation spray coating, electro spark coating, microarc oxidation coating, cold spray coating and EB-PVD coating technology. Excelled not only in the design and fabrication of a large number of unique test facilities and in carrying out well planned experiments using such facilities but also has modelled extensively the physical phenomena involved. Also responsible for establishing the Centre for Laser Processing of Materials (now a part of ARCI), the Surface Engineering Division at ARCI, the Centre for Fuel Cell Technology at Chennai, and the Centre for Sol-Gel Nanocomposite Coatings at ARCI. At ARCI, as Director, had made notable contributions to the development, demonstration and commercialization of materials-based technologies. Over 30 technologies have been transferred to private industries located all over India. Responsible for setting up and operation of the Advanced Materials Technology Incubator (AMT) which currently houses 5 companies, all of them receivers of ARCI technology.

Important Publications: **(1)** The dynamic indentation behaviour of steel at large depths of penetration (2009) *J. Materials Res.* **24**, 691–703. **(2)** Optical diagnostic study of gas particle transport phenomena in cold gas dynamic spraying and comparison with model prediction (2008) *J. Thermal Spray* **17**, 551–563. **(3)** Processing-structure-property correlation and decarburization phenomenon in detonation sprayed WC-12Co coatings (2008) *Acta Materialia* **56**, 5012–5026. **(4)** Influence of coating process parameters and heat treatment on the properties of cold sprayed Cu-A1203 coating (2007) *Acta Materialia* **55**, 4741–4751. **(5)** Kinetics and properties of micro arc oxidation coatings deposited on commercial A1 alloys (2007) *Metallurgical Materials Trans.* **38A**, 370–378.

Memberships: Fellow: INSA 96; AP Acad. of Sci. 99; INAE 2000; NASI 2002; IIM 2002; ASM 2005.

Awards & Distinctions: Young Scientists Award 85 • IASc Assoc. 87–88 • Homi Bhabha Fellowship 90–92 • S S Bhatnagar Award 94 • Best Metallurgist Award 95 • FICCI Award 2004 • G D Birla Gold Medal 2005 • J C Bose Fellowhip 2006 • INSA Prize 2007.

Sunder, Ramasubbu

Elected: 1995
Position: Technical Dir, BISS Research, Bangalore
Specialization: Fatigue and Fracture Testing for Strength and Endurance; Field Data Acquisition
Date and Place of Birth: 8 August 1953; Poona
Parents: R Ramasubbu and Lakshmi
Spouse and Children: Kala; one *d*
Address: BISS Research, 41A, 1st A Cross, Krishnappa Layout,
AECS, RMV Extension, Second Stage, Bangalore 560 094, India
Tel. (080) 2341 0813 (O), (080) 2341 4133 (R)
email: sunder@testresources.com, rs@biss.in

Education: KIEV Inst. Civil Aviation Russia: MTech 75, PhD 78.

Career: National Aerospace Laboratories, Bangalore: Sci. 78–86, Head of Dn 88–94; USAF Wright Aeronautical Res. Lab.: Sr Res. Assoc. 86–88; Bangalore Integrated Systems Solutions (P) Ltd: Tech Dir 94–.

Scientific Work: Development of fatigue loading standard for IAF combat aircraft. Adaptation of electron and optical microscopy to characterize fatigue circle growth and circle closure phenomenon. Discovery of hysteresis in crack closure. Development of servo hydraulic test technology and its automation. Adaptation to requirements of Indian R&D centres and industry in the area of material and product evaluation for strength and endurance.

Awards & Distinctions: CSIR Technology Award 90 • NRC Sr Associateship Award 85.

Sunder, Viakalathur Shankar

Elected: 1992
Position: Prof., IMSc, Chennai
Specialization: Von Neumann Algebras and Subfactors
Date and Place of Birth: 6 April 1952; Madras
Parents: V S Shankar and Vidya
Spouse and Children: Sita Ramaseshan; one *d* (Radha)
Address: Professor, The Institute of Mathematical Sciences, CIT Campus, Taramani, Chennai 600 113, India
Tel. (044) 2254 3210, (044) 2254 3100 (O), (044) 2451 6082 (R), Mobile: 94449 50534
email: sunder@imsc.res.in; www.imsc.res.in~sunder

Education: Univ. of Madras: BSc 71; IIT Madras: MSc 73; Indiana Univ., USA: PhD 77.

Career: Univ. of Calif. Santa Barbara: Instructor 77–78; Madras Christian College: Asst Prof. 78–89; TIFR Mumbai: Vis. Fellow 79-81; ISI Delhi: Lecturer 81–88; Purdue Univ, USA: Assoc. Prof. 85–86; UCLA; Vis Asst Prof. 86–87; ISI Bangalore: Assoc. Prof. 87–89, Prof. 89–95; RIMS, Kyoto, Japan: Guest Prof. 94–95; Inst of Math Sci., Chennai: Prof. 95–2002, Sr Prof. 2002–.

Scientific Work: Research specialization is in the area of subfactors (in the broader area of von Neumann algebras). Among the more notable of contributions is the use of the notion of a hypergroup to give one of the first proofs on non-occurrence of certain Coxeter graphs (D_{2n+1} *and* E_7) as principal graph invariant of a subfactor, as well as to construct many new subfactors. Recent work has been concerned with planar algebras and Kac algebras. In addition to some 60-odd papers, has authored or co-authored 6 books. His book *Introduction to subfactors*, co-authored with Vaughan Jones (who was awarded the Fields Medal for his work on subfactors and their applications to knot theory), is one of the standard treatises on the subject.

Important Publications: **(1)** *Bounded integral operators on L^2 spaces* (1978) Ergeb. der Math. 96, Springer-Verlag, Berlin. **(2)** *An invitation to von Neumann algebras* (1986) Universitext, Springer-Verleg, New York. **(3)** *Introduction to subfactors* (1997) London Math. Soc. Lecture Note Series 234, Cambridge University Press, Cambridge. **(4)** *Functional analysis: spectral theory* (1997) TRIM Series No. 13, Hindustan Book Agency, Delhi. **(5)** *Topological quantum field theories from subfactors* (2000) Chapman & Hall/CRC Research Notes in Mathematics Series 423.

Memberships: Fellow: NASI 97; INSA 2004; Ramanujan Math. Soc.

Awards & Distinctions: S S Bhatnagar Prize 96.

Surange, Krishna Rajaram

Elected: 1975
Specialization: Palaeobotany
Date and Place of Birth: 7 February 1920; Ujjain, Madhya Pradesh
Address: Flat No. 304, Ganapathi Apartments, B-747, Sector C, Mahanagar, Lucknow 226 006, India
Tel. (0522) 232 7804 (R)
email: ninasurange@yahoo.co.in

Education: Lucknow Univ.: MSc 43, PhD 47; Univ. of Cambridge, UK: PhD 49.

Career: Lucknow Univ.: Fellow 43–45; Birbal Sahni Inst. of Palaeobotany: Res. Asst 45–46, Dir 59–80; Botany School, UK: 1851 Exhibition Scholar 46–48; MACS Res. Inst., Pune: Dir 80–85.

Scientific Work: Has done morphological studies on two genera of the small South-American family – Cyclanthaceae and its fossil counterpart in India; worked on *Coenopterid* ferns (lower carboniferous) – *Botryopteris* and *Stauropteris*. Discovered heterospory in *Stauropteris burntislandica*, one of the earliest fern-like plants. Carried out detailed studies on the male and female reproductive organs of *Glossopteris* complex, and on the venation pattern of type species of Indian *Glossopteris*.

Memberships: Fellow: NASI 55; INSA 70; Maharashtra Acad. of Sci.; Palaeobotanical Soc. of India.

Awards & Distinctions: Ruchi Ram Sahni Res. Prize 47 • Birbal Sahni Medal 79.

Suresh, Venapally

Elected: 2008
Position: Prof., Univ. of Hyderabad
Specialization: Algebra; Quadratic Forms and Division Algebras; Arithmetic Geometry
Date and Place of Birth: 20 June 1966; Wangoor, Andhra Pradesh
Parents: V Narasimha Rao and V Lakshmi
Spouse and Children: G Suneetha; two *s*
Address: Department of Mathematics and Statistics, University of Hyderabad,
Gachibowli, Hyderabad 500 046, India
Tel. (040) 2313 4003 (O), (040) 2412 0110 (R), Mobile: 93910 13585
email: vssm@uohyd.ernet.in

Education: Osmania Univ.: BA 87; Univ. of Hyderabad: MSc 89; Bombay Univ.: PhD 94.

Career: TIFR: Res. Scholar 89–93, Res. Asst 93–95, Fellow 95–98, Reader 98–2001; Univ. of Hyderabad: Reader 2001–04, Prof. 2004–; Univ de Paris: Postdoc Fellow 95–96.

Scientific Work: Let k be a p-adic field and K a finite extension of $k(t)$. Let q be a quadratic form over K in n variables. Has proved that if $p > 2$ and $n > 8$, then q has a non-triviall zero.

Important Publications: **(1)** A question on the discriminants of involutions of central division algebras (1993) *Math. Ann.* **297**, 575–580. **(2)** Zero-cycles on quadric fbrations: Fiteness theorems and the cycle map (1995) *Invent. Math.* **122**, 83–117. **(3)** Isotropy of quadratic forms over function fields in one variable over p-adic fields (1998) *Publ. de I.H.E.S.* **88**, 129–150. **(4)** Galois cohomology in degree 3 of function fields of curves over number fields (2004) *J. Number Theory* **107**, 80–94. **(5)** The u-invariant of the function fields of p-adic curves *Ann.Math.*

Awards & Distinctions: INSA Young Scientist Medal 97 • IASc Assoc. 98–2001 • B M Birla Science Prize 2004 • Andhra Pradesh Scientist Award 2008.

Surjit, Singh*

Elected: 1986
Specialization: Physical Chemistry; Molecular Spectroscopy; Intermolecular Interactions; Force Fields
Date and Place of Birth: 12 June 1940; Jhelum, Now in Pakistan
Parents: S Budh Singh and Parmeshar Kaur
Spouse and Children: Baljit Kaur; two *d* (Alka Arora, Hina Arora)
Last Address: Department of Chemistry (RSIC), Indian Institute of Technology, Madras 600 036, India
***Deceased:** 6 September 1997

Education: Agra Univ.: BSc 60, MSc 62; IIT Kanpur: PhD 67.

Career: Univ. of Montreal, Canada: Res. Assoc. 66–68; Univ. of Calgary, Canada: Res. Assoc. 68–69, CIDA/NRC/Res. Asst 75–77; IIT Madras: Lecturer 69–71, Asst Prof. 71–79, Prof. 79–97, Dean Academic 85–90; Univ. of Marburg/Siegen, Germany: AvH Fellow 79–80, 84, 93; Univ. of Siegen, Germany: DFG Prof. 90–91; Pondicherry Engg College: Member BOG 85–90.

Scientific Work: Has applied theoretical and experimental aspects of molecular spectroscopy to studies on molecular interactions. Showed how Raman spectra of solutions of electrolytes in dipolar solvents give definite evidence of anion molecular interactions through the CH, groups. Well planned molecular orbital calculations on vibrational frequencies and force constants of molecular clusters give mechanism of the effect of cooperativity on the stabilization of liquid structures. Infra-red band intensities when reduced to the electrooptical parameters of complex molecules have yielded useful fundamental molecular parameters and explanation for the variation in infrared band intersities of fundamental and overtone transitions on complexations. Isotropic Raman spectra of solutions have been used for the evaluation of vibrational relaxation times which have given interesting information on the structure and stability of complexed species. *Ab initio* calculations on solvated ions and ion pairs give evidence of relative stability of solvent bound ion pairs in solutions.

Important Publications: **(1)** Electronic spectral intensities in binary solvent mixtures (1973) *Spectrochim. Acta* **29**, 981–996. **(2)** Infrared band intensities: A comparative study of the transition moment matrix elements for fundamentals and overtones (1981) *J. Mol. Struct.* **74**, 49–73. (3) Derivative analysis of Raman spectra of liquid water in the oxygen-hydrogen (deuterium) stretching region (1987) *J. Mol. Struct.* 195–204. **(4)** Raman spectral studies of ion-molecular interactions of lithium bromide and lithium iodide with dimethyl sulfoxide (1989) *J. Raman Spectrosc.* **20**, 169–179.

Memberships: Fellow: INSA 88.

Awards & Distinctions: Asundi Memorial Lecture Award 94.

Surolia, Avadhesha

Elected: 1987
Position: Dir., NII, New Delhi
Specialization: Biochemistry; Protein Folding and Design; Membranes
Date and Place of Birth: 3 December 1947; Kishangarh, Rajasthan
Parents: Ram Nivas Surolia and Sneh Prabha
Spouse and Children: Namita; one *d* (Ira)
Address: National Institute of Immunology, Aruna Asaf Ali Marg, New Delhi 110 067, India
Tel. (011) 2671 7102-03, (011) 2674 1002 (O), (011) 2674 2798 (R), Mobile: 98733 41733
email: surolia@nii.res.in

Education: Univ. of Jodhpur: BSc 70; Univ. of Baroda: MSc 72; Univ. of Madras: PhD 76.

Career: Indian Inst. of Chemical Biology, Calcutta: Sci. 76–81; IISc, Bangalore: Asst Prof. 81–86, Assoc. Prof. 86–91, Prof. 91–2006; Chmn, MBU 2000–06; NII. New Delhi: Dir 2006–.

Scientific Work: Pioneering contributions have strongly influenced research on structure and function of lectins, orientation and dynamics of cell surface carbohydrate receptors, protein folding internationally. Original strategies for drug and DNA delivery are widely acclaimed. Explained the enigmatic endotoxin neutralizing activity of polymyxin B to its specific ability to remove endotoxin from its assembly and attributed it to its unique amphiphilicity. Popularized Protein A as a tool in immunology. Discovered the fatty acid synthesis pathway in human malarial parasite that is distinct from its human host and its interference by triclosan, a biocide, paving the way for novel anti-malarial development.

Important Publications: **(1)** Interaction between lectin from *Ricinus communis* and liposome containing gangliosides (1975) *Nature* **257**, 802. **(2)** Immunotoxins to combat AIDS (1986) *Nature* **322**, 119–120. **(3)** A novel mode of carbohydrate recognition in jacalin, a Moraceae plant lectin with a B-prism fold (1996) *Nature Structural Biol.* **3**, 596–603. **(4)** Kinetics and mechanism of the recognition of endotoxin by polymyxin B (1998) *J. Am. Chem. Soc.* **120**, 12628–12634. **(5)** Triclosan offers protection against blood stages of malaria by inhibiting enoyl-ACP reductase of *P. falciparum* (2001) *Nature Medicine* **7**, 167–173. **(6)** 15-deoxyspergualin primarily targets the trafficking of apicoplast proteins in *Plasmodium falciparum* (2007) *J. Biol. Chem.* **282**, 6388–6397.

Memberships: Fellow: INSA 90; NASI 93; TWAS 2003.

Awards & Distinctions: C S Patel Gold Medal 72 • INSA Young Scientist Medal 76 • Young Biophysicist Fellowship 78 • Andhra University Medallion 78 • TWAS Prize • VASVIK Award 80 • Sreenivasaya Memorial Award 82 • S S Bhatnagar Award 87 • Shri Om Prakash Bhasin Award for Biotechnology 93 • FICCI Award 93 • IISc Alumni Award 99 • Mellanby Memorial Lecture 2000 • G N Ramachandran 60th Birthday Commemoration Medal 2000 • Goyal Prize 2002 • B R Ambedkar Centenary Award 2004 • Ranbaxy Science Foundations Award • W H Stillmark Prize 90.

Surolia, Namita

Elected: 2002
Position: Prof., JNCASR, Bangalore
Specialization: Molecular Parasitology; Biochemistry; Molecular Biology
Date and Place of Birth: 2 April 1953; Allahabad, Uttar Pradesh
Parents: Ramgopal Gaur and Susheela
Spouse and Children: Avadesha; one *d* (Ira)
Address: Molecular Biology & Genetics Unit, Jawaharlal Nehru Centre for Advanced Scientific Research,
Jakkur, Bangalore 560 064, India
Tel. (080) 2208 2820, (080) 2208 2821 (O), (080) 2360 0149 (R)
email: surolia@jncasr.ac.in

Education: Allahabad Univ.: BSc 71, MSc 73, PhD 79.

Career: Allahabad Univ: UGC JRF 74–77; Kothari Sci. Res. Inst., Kolkata: SRF 77–79; Jadavpur Univ.: CSIR SRF 79–81; IISc: Postdoc 82–85, Sr Sci. Offr 86–93, Fellow 93–95; JNCASR, Faculty Fellow 95–2002, Assoc. Prof. 2002–08, Prof. 2008–.

Scientific Work: Unique scientific achievements are the discovery-driven innovative research and consistent performance over the last two decades. Most significantly, the discoveries of several metabolic pathways in malaria parasite (existence of heme and type II fatty acid biosynthetic pathways in *Plasmodium*) were made in the pre-genomic era when no information regarding the *Plasmodium* genome was available. Made pioneering contributions in the field of *Plasmodium* protein synthesis and mechanism of action of chloroquine.

Important Publications: **(1)** Deciphering the key residues in *Plasmodium falciparum* beta-ketoacyl acyl carrier protein reductase responsible for interactions with *Plasmodium falciparum* acyl carrier protein (2008) *FEBS J.* **275,** 19, 4756–66. **(2)** A unique and differential effect of denaturants on co-factor mediated activation of *Plasmodium falciparum* β-ketoacyl-ACP reductase (2008) *Proteins: Structure, function, and Bioinformatics* **70**,2, 528–538. **(3)** 15-deoxyspergualin primarily targets the trafficking of apicoplast proteins in *Plasmodium falciparum* (2007) *J Biol Chem.* **282,** 9, 6388–6397. **(4)** Analyses of co-operative transitions in *Plasmodium falciparum* beta-ketoacyl acyl carrier protein reductase upon co-factor and acyl carrier protein binding (2006) *FEBS J.* **273**, 17, 4093–4103. **(5)** Triclosan offers protection against blood stages of malaria by inhibiting enoyl-ACP reductase of *Plasmodium falciparum* (2001) *Nat Med.* **7,** 2, 167–173.

Memberships: Member: Guha Res. Conf. • Fellow: NASI 2002.

Awards & Distinctions: C N R Rao Oration Award • Vasvik Award • M O T Iyengar Award.

Susheela, Andezhath Kumaran

Elected: 1987
Position: Exec. Dir, Fluorosis Res. & Rural Development Foundation, Delhi
Specialization: Histocytochemistry; Toxicology; Fluoride and Fluorosis Mitigation
Date and Place of Birth: 31 July 1937; Kauntan, Malaysia
Parents: A K Kumaran and Devayani Ammal
Address: Fluorosis Research & Rural Development Foundation, B-1,
Saransh, 34, Indraprastha Extension, Delhi 110 092, India
Tel. (011) 2273 1886 (O), (011) 2272 6725 (R), Mobile: 98105 35228
email: susheela@bol.net.in

Education: Univ. of Kerala: BSc 57; Maharaja Sayajirao Univ. of Baroda: MSc 59, PhD 64.

Career: AIIMS: Jr Res. Offr 63–64, Sr Res. Offr 64–69, Asst Prof. of Histocytochemistry 69–80, Assoc. Prof. 80–85, Additional Prof. 86–89, Prof. of Anatomy 89–97; Fluorosis Research & Rural Dev. Foundation: Dir 97–; Regional Neurological Centre and Muscular Dystrophy Res. Labs, UK: Nuffield Foundation Travelling Fellow in Medicine 67–68; Inst. for Muscle Disease, New York: Postdoct Res. 68–69.

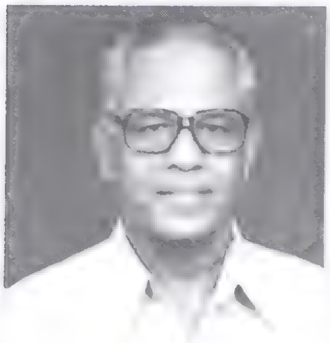
Scientific Work: Research related to safe drinking water, prevention and control of fluorosis; action of fluoride on biological tissues and macromolecules; fluoride action on teeth, skeletal and soft tissues; developing diagnostic protocols both for hospital and home-based environment; early detection and reversal of the disease have been the major contributions in the recent past. Basic researches in animal models and human patients have clearly established that the disease does not exclusively affect calcified tissues such as bone and teeth but also the non-classified tissues by way of inducing ectopic calcification. These findings have major relevance to the understanding of fluorosis and its prevention.

Important Publications: (1) *Handbook on planning and implementation of water supply programme in fluorosis endemic areas in India* (2009). (2) *Fluorosis: prevention and control: information for diet supplementation* (2009). (3) *Treatise on fluorosis* (2007) 3rd revised edition, published by Fluorosis Research & Rural Development Foundation, Delhi. (4) *Doctor's handbook on fluorosis* 1st Edition, July 2005. (5) Excess fluoride ingestion and thyroid hormone derangements in children living in Delhi, India *Fluoride* (2005) 38, 2, 98–108.

Memberships: Fellow: NAMS 89.

Awards & Distinctions: Ranbaxy Res. Foundation Award in Medical Sci. 87 • President: Intl Soc. for Fluoride: Res. 87–91 • Trivandrum Medical Coll. Oration 89 • Ashoka Fellow 2003 (Lifetime Achievement Award).

Suryanarayanan, Subrahmanyan*



Elected: 1971
Specialization: Plant Pathology; Microbiology; Biochemistry
Date and Place of Birth: 23 January 1927; Kadattur, Tamilnadu
Parents: T P Subrahmanie Iyer and S Varalakshmi
Spouse: Mangala; one *s* (Sankararaman)
Last Address: 10, L B Road, First Street, Indiranagar, Madras 600 020, India
***Deceased:** 27 January 1994

Education: Univ. of Madras: BSc 47, PhD 56, Dipl in French 55, Dipl in German 56.

Career: Madras Agri. College, Coimbatore: Res. Fellow 47; Sarva Jana High School, Coimbatore: Teacher 47–48; Agri. Res. Station, Kovilpatti: Agronomy Asst 49–51; Univ. of Madras, Botany Lab.: Postdoc Res. 51–61, CSIR Pool Offr 64, Lecturer 64–67, Reader 68–77, Prof. 78–87; Prairie Regional Lab., Canada: Postdoc Res. 61–63.

Scientific Work: For all researches, used a model system, the 'rice blast' disease by the air-borne pathogen *P. oryzae* on its host *O. sativa*. Besides establishing the total and absolute vitamin heterotrophy of *Pyricularia* spp to thiamine and biotin, the essentiality of Fe and Zn to *Pyricularia* growth was shown by the group. Also worked on aspects of essentiality of Fe and Zn in the growth of the fungus *in vitro*. Major effort in the 80s was the study of toxins which showed that except for Pyriculol, other reported toxins were not produced by Indian isolates of the fungus. Studied the role of genotype-nyctotemperature interactions in the rice-blast syndrome. Work at Philippines indicated that wettability of rice leaf surface is an important component of stable resistance of rice blast. Broke new ground when showed that rapid lignification during early stages of infection in blast-resistant rice varieties was accompanied by increased levels of PAL and peroxidases. Was always keen on employing the latest technique in laboratory bioassay of plant products.

Sushil Kumar

Elected: 1981
Position: INSA Sr Sci., NIPGR, New Delhi
Specialization: Genetics; Food Crops; Medicinal and Aromatic Plants
Date and Place of Birth: 14 December 1940; Delhi
Parents: K L Aggarwal and Sundri Devi
Spouse and Children: Pushpa; one s (Prashant)
Address: National Institute for Plant Genome Research, JNU Campus, New Delhi 110 067, India
Tel. (011) 2674 1612 (O), (011) 2686 5494 (R), Mobile: 98107 23891
email: sushil2000_01@yahoo.co.in

Education: Delhi Univ.: BSc Hons 60; IARI, New Delhi: MSc 62, PhD 65.

Career: IARI, New Delhi, Genetics Dn: Sr Sci. 71–82, Principal 83–85, Prof. of Molecular Biology & Biotechnology, Principal Sci. 85–89; CSIR, New Delhi: Sci. G 89–93; CIMAP, Lucknow: Dir 93–2000; NBRI, Lucknow: Dir 98–99; NIPGR, New Delhi: Emeritus Sci. and INSA Sr Sci. 2002–.

Scientific Work: Important contributions in bacterial and plant genetics. Examined the kinetics and distribution of radiation induced two-hit chromosome exchanges in barley. Observations and interpretation clinched the question of anomalous kinetics of two-break chromosome aberrations. Gave a model about arrangement of chromosomes in the eukaryotic interphase nucleus. Developed a large collection of mutants in barley. Identified the transcription termination sites tL, tR1 and tR2 and showed that *N* gene product antiterminates mRNA at these sites. Proved that *tof* gene product is the repressor of *C1* repressor. Showed that lambdoid phages required specific host factor(s) for their development. Responsible for defining the phenotypes of *cya* and *crp* mutants. Demonstrated that different *E. coli* functions are either activated or repressed by cyclic AMP-CRP complex. Defined and mapped 3 *thi* genes and 1 *pdx* gene and 3 leaf morphology genes (*Uni-tac, mfp* and *lld*). Was the first to demonstrate Pdx biosynthesis in plants. Revealed the genetic interactions between UNI, AF, TL, MFP, INS, ST and COCH genes in the regulation of leaf and stipule architecture in pea. By mapping and characterizing *gsv* mutants, has shown that pea plant, although C_3, has differential regulation of photosynthesis in mesophyll versus vascular cells. The group defined, mapped and cloned several genes of *Rhizobium meliloti* including those for surface receptors involved in symbiotic nitrogen fixation and for tolerance to salinity and high temperature. Also developed improved strains of rhizobia and azotobactors for use as nitrogen-fixing biofertilizers. Developed an improved strain of the plant *Artemisia annua*, that produces higher amounts of the antimalarial chemical artemisinin and several improved essential oil producing strains of mints. Constructed the genetic linkage map of the medicinal plant *Catharanthus roseus*. Demonstrated that two crops of wheat can be taken in tandem in the Indo-Gangetic plains between late September and early April.

Important & Publications: **(1)** The kinetics of two break chromosome exchanges and the spatial arrangement of chromosome strands in the inter-phase nucleus (1969) *Nature* **209**, 796–797. **(2)** Orientation and control of transcription in *Escherichia coli* phage Lambda (1969) *Nature* **221**, 823–825. **(3)** Properties of adenyl cyclase and cyclic adenosine 3, 5 monophosphate receptor protein-defiicient mutants of *Escherichia coli* (1976) *J. Bacteriology* **125**, 545–555. **(4)** High yields of artemisinin by multiharvest of *Artemisia annua* crops (2003) *Industrial Crops and Products* **19**, 77–90 **(5)** Regulation of stipule development by cochleata and stipule reduced genes in pea *Pisum sativum* (2009) *Planta* **230**, 449–458.

Memberships: Fellow: NAAS 92; NASI 93; INSA 95 • President: Indian Society of Genetics and Plant Breeding 94–98.

Awards & Distinctions: S S Bhatnagar Award 81 • NASI Distinguished Scientist Award 86 • Indian Society of Genetics and Plant Breeding Prize 65 • B P Pal Memorial Lecture Award 2003 • FCCI Science Award 2000 • Bhasin Award 2000 • INSA Lecture Award 2002.

Swaminathan, Monkombu Sambasivan

Elected: 1959
Position: Chmn, M S Swaminathan Res. Foundation, Chennai
Specialization: Genetics; Cytogenetics; Plant Breeding
Date and Place of Birth: 7 August 1925; Kumbakonam, Tamil Nadu
Parents: M K Sambasivan and S Thangam
Spouse: Mina; three *d*
Address: M S Swaminathan Research Foundation, III Cross Street, Taramani Institutional Area,
Chennai 600 113, India
Tel. (044) 2254 2790, 2254 1229/1698 (O), (044) 2434 5312 (R)
email: swami@mssrf.res.in, msswami@vsnl.net; URL: http://www.mssrf.org

Education: Travancore Univ.: BSc 44; Madras Univ.: BSc 47; IARI: Assoc. 49; Univ. of Cambridge, UK: PhD 58.

Career: CRRI, Cuttack: Asst Botanist 54; IARI: Asst Cytogeneticist 54–56, Cytogeneticist 56–61, Head of Botany Dn 61–66; IARI, New Delhi: Dir 66–72; Dept of Agricultural Res. and Education: Secretary; ICAR: Dir General 72–79; Ministry of Agriculture and Irrigation, Govt of India: Secretary 79–80; Planning Commission: Acting Dy Chmn 80; IRRI, Philippines: Director General 82–88; M S Swaminathan Res. Foundation, Chennai: Chmn 88–; Centre for Res. on Sustainable Agricultural and Rural Development, Madras: Dir: 89–.

Scientific Work: Elucidated origin and differentiation of potato species. Studied genetic relationships among wheat species. Standardized techniques for the induction of polyploidy in several economic plants. Elucidated factors influencing induction and recovery of mutations in wheat and rice and elaboration of relationships between secondary effects of food irradiation and assessment of wholesomeness of irradiated food. Identified barriers to high yields in wheat and initiation of wheat breeding programme involving the 'Norin' dwarfing genes obtained from Mexico. Developed concept of `crop cafeterias', `mid-season corrections in crop-scheduling', risk distribution agronomy and alternative cropping strategies for different weather conditions. Purposefully manipulated genes in improving yield, quality and stability of performance of wheat, rice and potato. Developed whole village or watershed operational research projects based on principles of ecology and economics and promotion of the concepts of ecological economics and economic or developmental ecology. Developed disaster management strategies based on relief and rehabilitation measures in most seriously affected areas and improved crop productivity in most favourable areas and wheat. Organized coastal systems research and bio-villages.

Important Publications: **(1)** *An evergreen revolution* (2006). **(2)** *I predict: A century of hope towards an era of harmony with nature and freedom from hunger* (1999). **(3)** *Gender dimensions in biodiversity management*, (1998). **(4)** *Implementing the benefit sharing provisions of the convention on biological diversity: Challenges and opportunities* (1997). **(5)** *Agrobiodiversity and farmers* rights (1996).

Memberships: Fellow: INSA 62; Royal Soc. of London 73; US Natl Acad. For. Assn 77; TWAS 83; Bangladesh Acad. of Sci. 92; Royal Soc. of Arts, London; European Acad. of Arts, Sciences and Humanities.

Awards & Distinctions: S S Bhatnagar Award 61 • Mendel Memorial Award of Czechoslavak Acad. of Sci. 65 • Birbal Sahni Medal 66 • Padma Shri 67 • Ramon Magsaysay Award • Padma Bhushan 72 • Meghnad Saha Medal 81 • Rabindranath Tagore Prize 81 • R D Misra Medal 82 • Award for serving the cause of women in development, USA 85 • Albert Einstein World Science Award 86 • Krishi Ratna Award • J C Bose Medal 89 • Padma Vibhushan • Lal Bahadur Shastri Deshgaurav Samman 92 • Charles Darwin International Science and Environment Medal 93 • Universities in India and abroad, DSc (hc).

Swaminathan, Sambasiva

Elected: 1969
Specialization: Organic Chemistry
Date and Place of Birth: 20 April 1923; Madras, Tamil Nadu
Parents: K Sambasiva Iyer and S Meenakshi
Spouse: Mallika; two *d* (Kausalya, Buvana)
Address: No. 6, 12th Cross Street, Shastri Nagar, Chenai 600 020, India
Tel. (044) 2491 1858 (R)
email: swaminathan1923@yahoo.co.in

Education: Annamalai Univ.: BSc Hons 43; IISc, Bangalore: AIISc 46; Univ. of Illinois, USA: PhD 49.

Career: Ohio State Univ.: Res. Assoc. 49–52, 57–58; Univ. of Madras, Dept of Organic Chemistry: Reader 53–60, Prof. 60–66, Sr Prof. 66–83, INSA Sr Sci. 86–88, CSIR Emeritus Sci. 90–92.

Scientific Work: One of the earliest to synthesize 8a-methyl-Δ-octalin-1, 6-dione (Wieland–Miescher ketone) on the preparative scale and elaborate it to C_{11} intermediates for steroid syntheses. Was the first to develop efficient synthesis of 2-methyl-1, 3-cyclo-pentane dione used as a preformed ring in many later steroid synthesis. Discovered in 1962 a new base catalysed molecular rearrangement – the first example of a formal anionic oxy-Cope rearrangement and used it to prepare a variety of carbocyclic systems. Has demonstrated that the mechanism of this rearrangement can be concerted or stepwise. Has reported transannular reactions in eight atom rings, the synthesis of many bicyclic ketones with angular methyl groups, a facile 5-carbon annelation and also an unusual reductive cyclization during the course of studies in the field of molecular rearrangements. Has contributed to heterocyclic chemistry too; showed that indoles undergo Mannich reaction to give N-Mannich bases also. Such bases first reported in 1966 have been found useful recently in the synthesis of indole derivatives. Developed new synthesis of thienopyrroles. Contributed to the stereochemistry of hindered benzophenones and also provided evidence for neighbouring group participation in aromatic nucleophilic substitutions. In a significant finding in the field of asymmetric synthesis, reported that Robinson annulation of 2-formylcyclohexanone in the presence of s-proline gives enantiomeric products depending on whether the reaction is carried out in one step or two steps.

Memberships: Member: Sigma Xi • President: Madras Science Assn • Fellow: INSA 78; Indian Chemical Soc.; Tamil Nadu Acad. of Sciences • Founder Trustee: NOST (Natl Organic Symposium Trust).

Important Publications: (1) *J. Org. Chem.* 22, 70 (1957). (2) *J. Org. Chem.* 26, 727 (1961). (3) *Tetrahedron Lett.* 729 (1962). (4) *J. Indian Chem. Soc.* 59, 99 (1984). (5) *Tet. Asym.* 7, 2189 (1996).

Awards & Distinctions: T R Govindachari Award 80 • Acharya Ray Award 81 • Lifetime Award of Chemical Res. Soc. of India 2000.

Swamy, Musti Joginadha

Elected: 2007
Position: Prof., Univ. of Hyderabad
Specialization: Protein Chemistry and Protein-Ligand Interaction; Lipid Phase Behaviour and Polymorphism and Lipid-Protein Interaction
Date and Place of Birth: 11 August 1959; Narsapur, Andhra Pradesh
Parents: Musti Rama Krishna Sastry and Parvathi
Spouse and Children: Sudha; two s
Address: School of Chemistry, University of Hyderabad, Hyderabad 500 046, India
Tel. (040) 2313 4807, (040) 2301 1071 (O), (040) 2301 2548 (R), Mobile: 98660 07530
email: mjssc@uohyd.ernet.in; URL: http://202.41.85.161/~mjs

Education: Andhra Univ.: BSc 79; Univ. of Hyderabad: MSc 81; IISc: PhD 87.

Career: Max Planck Inst. for Biophys. Chem., Gottingen: Postdoc 90–93; Univ. of Hyderabad: Lecturer 93–98; Reader 98–2004; Prof. 2004–.

Scientific Work: First to show that several plant lectins bind porphyrins with affinities comparable to their recognition of carbohydrates. Demonstrated that long chain *N* acylethanolamines, lipid molecules whose content increases under stress, form 1:1 stoichiometric complexes with cholesterol. Contributed towards better understanding of cholesterol efflux, a process that is a key step in the events leading to fertilization in mammals.

Important Publications: **(1)** Molecular packing and intermolecular interactions in two structural polymorphs of *N*-palmitoylethanolamine, a type-2 cannabinoid receptor agonist (2006) *J. Lipid Res.* **47**, 1424–1433. **(2)** Beyond carbohydrate binding: New directions in plant lectin research (2006) *Org. Biomol. Chem.* **4**, 973–988. **(3)** Mechanism of membrane binding by the bovine seminal plasma protein, PDC-109. A surface plasmaon resonance study (2003) *Biophys. J.* **84**, 3037–3044. **(4)** N-myristoylethanolamine – Cholesterol (1:1) complex: First evidence from differential scanning calorimetry, fast-atom-bombardment mass spectrometry and computational modelling (2002) *FEBS Lett.* **531**, 343–347. **(5)** Thermodynamic and kinetic analysis of porphyrin binding to *Trichosanthes cucumerina* seed lectin (2001) *Eur. J. Biochem.* **268**, 5541–5549.

Memberships: Fellow: NASI 2007; Andhra Pradesh Akademi of Sci. 2006 • Member: Guha Res. Conf. 2006.

Swarup, Ghanshyam

Elected: 1995
Position: Sci., CCMB, Hyderabad
Specialization: Molecular and Cell Biology; Biochemistry; Cell Signalling
Date and Place of Birth: 23 November 1953; Bhogaon, Manipuri Dist, Uttar Pradesh
Parents: Sadhu Ram and Sheela Devi
Spouse and Children: Madhu; one *s*, one *d* (Ankit, Neha)
Address: Centre for Cellular and Molecular Biology, Uppal Road, Hyderabad 500 007, India
Tel. (040) 2719 2616 (O), (040) 6521 6693 (R), Mobile: 99891 33201
email: gshyam@ccmb.res.in

Education: Kanpur Univ.: BSc 73, MSc 75; Univ. of Bombay: PhD 80.

Career: Vanderbilt Univ., USA, Dept of Pharmacology: Res. Assoc. 80–82, Res. Instructor 83; CCMB, Hyderabad: Sci. 83–.

Scientific Work: Work in protein phosphorylation, molecular biology of protein tyrosine phosphatases and tyrosine kinases. Showed that alkaline phosphatases can selectively dephosphorylate proteins phosphorylated on tyrosine; discovered orthovanadate as specific inhibitor of tyrosine phosphatases; showed that guanine nucleotides increase phosphorylation of rhodopsin, described tyrosine kinase activity in normal tissues; showed that autophosphorylation and dephosphorylation by tyrosine phosphatase regulate activity of a tyrosine kinase; isolated four different forms of a tyrosine phosphatase which arise due to alternative splicing; showed DNA binding of a nuclear tyrosine phosphatase, PTP-S, associated with chromatin and nuclear matrix; defined a DNA binding and regulatory domain in C-terminus of PTP-S; showed cell cycle-dependent expression of PTP-S mRNA in T-lymphocytes, regenerating liver and HeLa cells.

Important Publications: **(1)** Two splice variants of a tyrosine phosphatase differ in substrate specificity, DNA binding and subcellular location (1996) *J. Biol. Chem.* **271**, 26755–26761. **(2)** Direct transcriptional activation of human caspase-1 by tumour suppressor p53 (2001) *J. Biol. Chem.* **276**, 10585–10588. **(3)** Physical and functional interaction between Hck tyrosine kinase & guanine nucleotide exchange factor C3G results in apoptosis, which is independent of C3G catalytic domain (2003) *J. Biol. Chem.* **278**, 52188–52194. **(4)** Evidence for a role of transmembrane protein p25 in localization of protein tyrosine phosphatase TC48 to the ER (2006) *J. Cell Sci.* **119**, 1703–1714. **(5)** A glaucoma-associated mutant of optineurin selectively induces death of retinal ganglion cells which is inhibited by antioxidants (2007) *Invest. Ophthalmol. Vis Sci.* **48**, 1607–1614.

Memberships: Fellow: INSA 2003 • Member: Guha Res. Conf.; Indian Soc. of Cell Biology; Soc. of Biological Chemists.

Awards & Distinctions: CSIR Young Scientist Award 89 • S S Bhatnagar Prize 96.

Swarup, Govind

Elected: 1967
Position: INSA Hon. Sci., NCRA, Pune
Specialization: Radio Astronomy: Solar; Extragalactic; Cosmology
Date and Place of Birth: 23 March 1929; Thakurdwara, Uttar Pradesh
Parents: Ram Raghubir Saran and Gunwati Devi
Spouse: Bina; one *s*, one *d* (Vipin, Anju Basu)
Address: 10 Cozy Retreat, Road No. 3, Sindh Society, Aundh, Pune 411007, India
Tel. (020) 2571 9277 (O), (020) 2585 1630 (R), Mobile: 98907 85850
email: gswarup29@gmail.com

Education: Allahabad Univ.: BSc 48, MSc 50; Stanford Univ., USA: PhD 61.

Career: NPL: Res. Scholar, 50–51, Jr Sci. Offr, 55–56; Radio Res. Committee of CSIR: Secretary 51–53; CSIRO, Sydney: Colombo Plan Fellowship 53–55; Harvard Univ., USA: Res. Assoc. 56–57; Stanford Univ., USA: Graduate Student 57–60, Asst Prof. 61–63; TIFR, Bombay: Reader 63–65, Assoc. Prof. 65–70, Prof. 70–79, Sr Prof. 79–90, Prof. of Eminence 90–94; NCRA, Pune: Centre Dir. 90–94, GMRT: Project Dir. 87–96, Prof. Emeritus 94–99, Homi Bhabha Sr Fellow 99–2001, INSA Hon. Sci. 2001–2005.

Scientific Work: Discovery of type U solar radio burst, studies of quiet Sun at centimetre and decimetre wavelengths and the gyro-radiation model developed for explaining the slowly varying component are pioneering contributions. Also developed a new technique for phase adjustment of large antennae used extensively for phase synchronization of local oscillator signals in almost all radio interferometers and synthesis radio telescopes constructed the world over. Established an angular-size flux-density relation for extragalactic radio sources, which along with angular size counts, showed that not only the density of radio sources was higher at earlier cosmic epochs but their linear sizes were smaller. These results provided an independent evidence for the big bang evolutionary model. Also made many important contributions to the studies of radio galaxies and quasars, particularly concerning their cosmological evolution. Conceived, designed and fabricated a 530 x 30 m cylindrical radio telescope of unique design in Ooty. Directed the design and construction of a giant metrewave length radio telescope in Pune, the world's largest, operating in the frequency range 38–1500 MHz.

Important Publications: **(1)** A model for the slowly varying component of the solar radiation (1962) *Astrophys. J.* **136**, 975–994. **(2)** Phase adjustment of large antennas (1961) *Trans. I.R.E.* **AP9**, 75–81. **(3)** Large steerable radio telescope at Ootacamund, India (1971) *Nature Physical Sci.* **30**, 185–188. **(4)** Angular size-flux density relation for extragalactic radio sources (1975) *Mon. Not. R. Astron. Soc.* **172**, 501–512. **(5)** The giant metrewave radio telescope (1991) *Curr. Sci.* **60**, 95–105.

Memberships: Fellow: INSA 75; NASI 88; Royal Soc. of London 91; Indian Geophysical Union; TWAS 91 • Academician Intl Acad. of Astronautics; Pontifical Acad. of Sci. • President: IAU Commission on Radio Astronomy 79–82.

Awards & Distinctions: S S Bhatnagar Award 72 • Padma Shri 73 • Jawaharlal Nehru Fellowship 74 • INSA P C Mahalanobis Medal 84 • Biren Roy Trust Medal 86 • INSA Vainu Bappu Award 87 • Doctor of Engineering (hc) Roorkee University • Tskolovosky Medal of Federation of Cosmonautics, USSR 87 • Meghnad Saha Medal 87 • TWAS Award 88 • URSI John Howard Delinger Gold Medal 90 • R D Birla Award 90 • FIE Foundation Award 91 • Gujar Mal Modi Science Award 93 • INSA C V Raman Medal 93 • Devaprasad Sarbadhikari Medal 94 • M P Birla Award 95 • 12th Khwarizmi International Award, Iran 99 • Distinguished Alumni Award of the University of Allahabad 99 • H K Firodia Senior Award 2001 • B C Roy Award • Lifetime Achievement Award, Univ. of Pune 2005 • William Hershel Medal 2005 • General President's Medal, Indian Science Congress • Grote Reber Medal 2007 • Lifetime Achievement Award, DAE.

Tahseen, Qudsia

Elected: 2007
Position: Reader, Aligarh Muslim Univ.
Specialization: Nematology; Taxonomy; Biology & Functional Biodiversity of Soil; Freshwater Nematodes
Date and Place of Birth: 15 December 1964; Azamgarh, Uttar Pradesh
Parents: Abdul Mannan Helali and Saiyada Fatima
Spouse and Children: Faizan Ahmad; one *s*, one *d* (Omar Hanif, Beenish Hanif)
Address: Reader, Department of Zoology, Aligarh Muslim University, Aligarh 202 002, India
Tel. (0571) 270 0921-23/3440 (O), 9410210184 (R), Mobile: 93196 24196
email: tqudsia@hotmail.com, qtahseen@gmail.com
URL: http://www.rothamsted-international.org/RIFS_alumni_news.shtml

Education: AMU: BSc 82, MSc 84, MPhil 87, PhD 89.

Career: AMU: Lecturer 89–90; CSIR: Res. Assoc. 91–92; AMU: Lecturer 92–95, Sr Lecturer 95–2000, Reader 2000–09, Prof. 2009–.

Scientific Work: Has studied the taxonomy, biology and functional biodiversity of terrestrial and aquatic nematodes. Besides contributing to the sparse list of nematode taxa, analysed the community structure of nematodes to assess the quality of environment. Holistic approach combining morphology with development biology and ecology, to characterize an organism, led to a better understanding of nematode taxa and by continued laudable efforts remains the first Asian to receive ONTA (Organization of Nematologists of Tropical America) for sustained excellence in nematology. Acclaimed publications are the outcome of elaborate and lucid taxonomic observations supplemented with excellent SEM that solved morphological obscurities in many free-living and predatory nematode taxa. Also pioneered studies in India on developmental biology of nematodes to trace their phylogenetic relationships.

Important Publications: **(1)** A scanning electron microscope study on *Mononchoides fortidens* (1992) *Nematologica* **38**, 296–303. **(2)** Observations on three species of the sub family Acrobelinae (Nematoda: Cephalobidae) from India (1999) *Nematology* **1**, 527–537. **(3)** Electropharyngeograms of pharyngeal pumping activity in six species of free-living nematodes (2004) *Nematology* **6**, 49–54. **(4)** Embryology and gonad development in *Oscheius shamimi* sp. n.(Nematoda: Rhabditida) (2006) *Nematology* **7**, 1–11. **(5)** Species of *Teratorhabditis* (Nematoda: Rhabditida) from sewage and manure samples in India including a discussion on relationships within the genus (2007) *Hydrobiologia* **583**, 127–140.

Memberships: Rothamsted International Fellow; Soc. of Wetland Scientists, US; Indian Science Congress Assn; Indian Soc. of Parasitologists; Indian Soc. of Developmental Biologists.

Awards & Distinctions: S C Goyal & Swami Pranavanand Awards of ISDB 92 • ISCA Young Scientist Award 95 • INSA Young Scientist Medal 95 • Rothamsted International Fellowship 2002–03 • DBT Overseas Fellowship 2006–07 • ONTA Special Award for Sustained Excellence in Nematology 2006 • Visiting Scholars Fellowship (TWAS & CAS) 2007–08.

Talwar, Gursaran Parshad

Elected: 1974
Position: Dir Res.,Talwar Res. Foundation, New Delhi
Specialization: Endocrinology; Reproductive Health; Immunology
Date and Place of Birth: 2 October 1926; Hissar, Haryana
Parents: Dina Nath and Sumitra
Spouse and Children: Raksha; one *s*, two *d* (Pratap Raj, Priyae, Dipali)
Address: The Talwar Research Foundation, E-6-8, Neb Valley, Neb Sarai,
Sainik Farms, New Delhi 110 068, India
Tel. (011) 2953 1039, (011) 2953 6769 (O), (011) 2953 3229 (R), Mobile: 93122 43521
email: gptalwar@immunologyfoundation.com, talwar37@rediffmail.com

Education: Panjab Univ.: BSc Hons 46, MSc 48; Sorbonne Univ., France: Docteur es Sci. 53.

Career: AIIMS, New Delhi, Dept of Biochemistry: Prof. and Head 65–83; NII, New Delhi: Dir 81–91, Prof. of Eminence 91–94; ICGEB, New Delhi: Sr Consultant & Prof. of Eminence 94–99; Talwar Res. Foundation, Delhi: Dir Res. 2000–.

Scientific Work: Developed a number of vaccines for control of human and animal fertility. Vaccine directed against human chorionic gonadotropin (hCG) passed successfully clinical trials demonstrating its safety, reversibility and efficacy in preventing pregnancy for the first time for a birth control vaccine. A vaccine for leprosy based on a non-pathogenic cultivable mycobacteria was developed and approved by Drugs Controller General of India and US FDA; marketed by Cadilla. The vaccine developed against LHRH tested effective in India and USA for control of fertility in animals. Effective also for atrophy of prostate; clinical trials in India and Austria in carcinoma prostate patients. Basic contribution on mechanism and action of growth promoting and developmental hormones.

Important Publications: **(1)** A novel polyherbal microbicide with inhibitory effect on bacterial, fungal and viral genital pathogens (2008) *Int. J. Antimicrob. Agents* **32**, 180–185. **(2)** An immunotherapeutic vaccine for multibacillary leprosy (1999) *Int. Rev. Immunol.* **18**, 229–249. **(3)** Vaccines and passive immunological approaches for the control of fertility and hormone-dependent cancers (1999) *Immunol. Rev.* **171**, 173–192. **(4)** A vaccine that prevents pregnancy in women (1994) *PNAS USA* **91**, 8532–8536. **(5)** Isoimmunization against human chorionic gonadotropin with conjugates of processed beta subunit of the hormone and tetanus toxoid (1976) *PNAS USA* **73**, 218–222.

Memberships: Fellow: INSA 71; NASI 88; NAMS.; Indian College of Allergy & Applied Immunology; Royal College of Obstetricians and Gynaecologists, London • President: Indian Immunology Soc.; Endocrine Soc. of India; Indian College of Allergy and Applied Immunology; Federation of Immunological Societies of Asia Oceania; Intl Soc. for Immunology of Reproduction.

Awards & Distinctions: National Award in Biomedicine 69–70 • ICMR Basanti Devi Amir Chand Award 72 • FICCI Cash Award 77 • J C Bose Prize in Life Sciences • Hari Om Ashram Award 78 • Sunder Lal Hora Medal 78 • ICMR Jalma Trust Prize 79 • Jawaharlal Nehru Fellow 79–81 • R D Birla Smarak Kosh Award 82 • NIH Fogarty Scholar-in-Residence Award 82–85 • Chinese Acad. of Sci. Medal 87 • Polish Acad. of Sci. Medal 88 • Ranbaxy Research Award 90 • Officier de la Legion d"Honneur, France 91 • Vis. Prof., College de France 91 • Padma Bhushan 92 • Indian Immunol. Soc., Life-time Achievement Award 98 • World Acad. of Art & Sci. • Mastroianni Segal Award 99 • D P Burma Memorial Award Lecture 2007 • INSA Golden Jubilee Commemoration Award 2007 • Y S Row Memorial Oration 2008.

Tamhankar, Ramachandra Vaman*

Elected: 1975
Specialization: Metallurgy
Date and Place of Birth: 28 July 1917
Parents: Vaman Tamhankar
Spouse and Children: Georgette; two *d*
Last Address: 18-8-254, Plot No. 12, Rakshapuram Colony, Saidabad, Hyderabad 500 659, India
***Deceased:** 16 June 1993

Education: Univ. of Bombay: MSc 43; UK City of Guilds: Cert in Elecl Engg; Univ. of Paris, France: PhD 57.

Career: Elphinstone College, Bombay: Demonstrator in Phys. 43–46; Sankey Electrical Stampings, Bombay: Res. Physicist 46–47; V J Technical Inst., Bombay: Lecturer in Electrical Engg. 47–49; TISCO, Jamshedpur: Res. Metallurgist 49–55; Inst. de Recherches Siderurgie Francaise, France: Sr Res. Engineer 55–63; Defence Metallurgical Res. Lab., Hyderabad: Dir 64–75; Mishra Dhatu Nigam Ltd., Hyderabad: Chmn and Managing Dir 75–79; IISc., Bangalore: Vis. Prof. 79–81; Kamani Metals and Alloys Ltd., Bombay and Bangalore: Dir Technical Chief of R & D 82.

Scientific Work: While at DMRL, Hyderabad started work in advanced materials and processes such as super and heavy alloy, titanium, tungsten and magnesium alloys, precision casting, powder metallurgical processes and products, high conductivity copper, advanced ceramic products, atomized and HIPed materials, etc. His brainchild Mishra Dhatu Ltd, Hyderabad, established by Govt. of India used imported technology in manufacture of advanced materials such as superalloys, titanium, molybdenum and tungsten alloys and magnetic materials etc., to meet the requirements of aircraft, missiles, space technology, electronic, defence and other industries.

Memberships: President: Powder Metallurgy Assn of India; Magnetic Soc. of India; Marathi Vigyan Parishad.

Awards & Distinctions: FICCI Award 77.

Tandon, Prakash Narain

Elected: 1983
Specialization: Neurosciences; Neurosurgery
Date and Place of Birth: 13 August 1928; Shimla, Himachal Pradesh
Parents: R N Tandon and Saraswati
Spouse and Children: Leela; one s
Address: No. 1, Jagriti Enclave, Vikas Marg Extension, Delhi 110 092, India
Tel. (0124) 233 8929 (O), (011) 2216 3272 (R)
email: tandon@nbrc.ac.in

Education: Univ. of Lucknow: MBBS 50, MS 52; Univ. of London, UK: FRCS 56.

Career: K G Med. College, Lucknow: Sr Demonstrator in Anatomy 52–53, CSIR Pool Offr 61–63, Prof. of Neurosurgery 63–65; Irwin Hospital, New Delhi: Casualty Med. Offr 53–54; SJTB Hospital, Delhi, WHO Thoracic Surgery Unit: Asst Surgeon 54–55; AIIMS, New Delhi: Prof. 65–90, Emer. Prof. 90–.

Scientific Work: Research contributions deal primarily with problems of immediate and direct relevance to the health needs of the country. Research concerned with delineation of the pattern of neurological diseases in India. New syndromes were described for the first time, as also the variations in the manifestations of the well-known disorders. Established the significance of temporal lobe lesions, the pathogenesis of growing fracture skull, the clinico-pathological profile of brain stem haemorrhages on the basis of the largest series of such cases reported anywhere in the world. In addition to primary clinical research, more sophisticated investigations including neuro-nuclear, neuropathological, neuroendocrinological and immunohistochemical were added to study a variety of brain tumours. Moved to more basic subjects like experimental neural transplantations in rodents and sub-human primates which have established the phenomenon of premature ageing and progressive degeneration of transplanted neurons.

Memberships: Fellow: NAMS 73; NASI 74; INSA 79; Royal Soc. of Medicine, London; TWAS 92.

Awards & Distinctions: Padma Shri 73 • Surgeon to the President of India 76 • B C Roy Award 80 • INSA Dhanwantari Award 86 • ICMR O P Bhasin Award 88 • Padma Bhushan 89; .

Tandon, Ram Narayan*

Elected: 1958
Specialization: Mycology; Plant Pathology
Date and Place of Birth: 27 November 1903; Shikohabad, Uttar Pradesh
Parents: Nihal Chand Tandon and Mehtab Devi
Spouse and Children: Saraswati Devi; four *s* (Bishan, Prakash, Anand, Gopal)
Last Address: c/o P N Tandon, 1, Jagriti Enclave, Vikash Marg, New Delhi, India
***Deceased:** 18 December 1999

Education: Allahabad Univ.: Bsc 25, MSc 27; Univ of London: DIC 39, PhD 39.

Career: Univ. of Allahabad, Dept of Botany: Demonstrator, Prof; 27–65, Prof. Emeritus 65–73; Head of Dept 59–65; IAS Trg Centre for Scheduled Castes & Scheduled Tribes, Govt of India: Principal.

Scientific Work: Worked on fungal taxonomy which covered fungi from the plains and hill regions of Uttar Pradesh and neighbouring states. Described more than 60 new fungi many of which were new taxa. Studies included fungal physiology and nutrition of 45 different strains and species of pathogenic fungi responsible for storage diseases of fruits and vegetables and the leaf spots disease. Fungal diseases of crop plants and fruit trees with special reference to post-harvest diseases were investigated. These included fruits like mango, banana, guava, apple, pear, litchi, papaya and sapota. Assessed role of different pathogens responsible for spoilage. Elucidated nature and role of different cell wall degrading enzymes, with special reference to cellulolytic and pectolytic enzymes. Undertook detailed studies on the extracellular enzymes secreted by the species of *Fusarium, Alternaria, Helminthosporium, Curvularia* and *Pestalotiopsis.* Examined post-infection changes following fungal infection of these fruits and vegetables. Assessed qualitative and quantitative losses in the levels of carbohydrates, proteins and Vitamin C. Demonstrated that the pathogens not only greatly modified the organic acid contents of the hosts but also brought about drastic changes in carbohydrates resulting in the rot. Elaborated synthesis of oligosaccharides in carbohydrate metabolism of fungi and its role in conservation and proper utilization of the carbohydrates present in the host tissue.

Important Publications: **(1)** Efficacy of certain fungicides and an antibiotic against four isolates of *Botryodiplodia theobromae* (1971) *Indian Phytopathol.* **24** 336–397. **(2)** A new species of *Curvularia* Boed causing fruit rot of tomato (*Lycopersicon esculentum* Mil) (1964) *Naturwissinchaften* **297**. **(3)** Pathological studies of *Gloeosporium psidii* causing die-back of guava (1954) *Proc. Indian Acad. Sci.* **B40** 102–109. **(4)** *Mucorales of India* (1969) ICAR Monograph

Memberships: Fellow: NASI; INSA 64; IAAS.

Awards & Distinctions: President: NASI 76–77 • Indian Phytopathol. Soc. 66; Mycol. Soc. of India 80; Phytopathological Soc. of India 66.

Tandon, Sampat Kumar

Elected: 1987
Position: Pro-Vice Chancellor, Univ. of Delhi
Specialization: Sedimentology; Physical Stratigraphy; Quaternary Geology
Date and Place of Birth: 13 August 1945; Delhi
Parents: Piara Lal Tandon and Karam Devi
Spouse and Children: Anita; two s, (Aditya, Amitabh)
Address: University of Delhi , Delhi 110 007, India
Tel. (011) 2766 7899 (O), (011) 2766 2696 (R), Mobile: 98104 37365
email: sktand@nda.vsnl.net.in, sktand@rediffmail.com

Education: Panjab Univ.: BSc Hons 65, MSc Hons 66; Univ. of Delhi: PhD 72;

Career: IIT New Delhi, Dept of Civil Engg: Assoc. Lecturer 66–68; Wadia Inst. of Himalayan Geology, Dehradun: Sci. Offr 71–76, Sr Sci. Offr 76; Univ. of Delhi, Dept of Geology: Reader 76–86, Prof. 86-; Dean, Faculty of Sci. 92–93; Head of the Dept of Geology 90–93; Pro-Vice Chancellor 2005–; Dalhousie Univ., Canada: Commonwealth Fellow 93–94; Shizuoka Univ., Japan & Univ. of Cambridge, UK: Postdoc Res. 81 & 85.

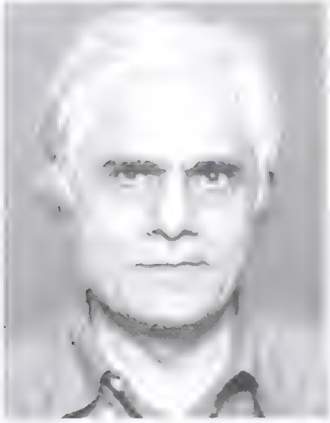
Scientific Work: Established a chronological framework using magnetic polarity stratigraphy, and elucidated lithofacies, sedimentation patterns and palaeoflow variability of late orogenic neogene sequences in the Himalayan foreland. Developed discrimination criteria for pedogenic and non-pedogenic calcretes in continental alluvial sequences. Recognized short-term climatic shifts in carboniferous cyclothems, and provided evidence of concurrent relative change in climate and sea-level. Integrated stratigraphic/palaeontologic/palaopedologic data on late cretaceous strata of Central India, and developed a satisfactory palaeoenvironmental model for an important maastrichtian formation in which some of the last dinosaurs are preserved. Used stable carbon isotope data of late cretaceous palaeosols in India to estimate the concentration of carbon dioxide in the late cretaceous atmosphere. Also worked on neotectonic adjustment of Ravi and Sabarmati drainage basins; developed a thermochronology constrained late Quaternary aggradation history of Sabarmati sequence. Recent contributions include a) the responses of late Quaternary fluvial systems to shifts in monsoonal precipitation and tectonic geomorphology of a part of the Himalayan front.

Important Publications: **(1)** Calcrete conglomerate, case hardened conglomerate and cornstone a comparative account of pedogenic and non-pedogenic carbonates from the continental Siwalik group (1981) *Sedimentol.* **28**, 353–357. **(2)** Calcrete and coal in late carboniferous cyclothems of Nova Scotia climate and sea-level changes linked (1994) *Geology* **22,** (8), 755–758. **(3)** Paleoenvironments of the dinosaur-bearing Lameta beds (Maastrichtian), Narmada valley, Central India (1995) *Paleogeogr. Palaeoclimatol. Paleoecol.* **117**, 153–184. **(4)** Aggradation history and luminescence chronology of late quaternary semi-arid sequences of the Sabarmati Basin, Gujarat, Western India (1997) *Paleogeogr. Palaeoclimatol. Paleoecol.* **128**, 339–357. **(5)** Alluvial valleys of the Gangetic Plains, India: Causes and timing of incision (2006) *Valleys in time and space*, SEPM Special Publication No. **85**, 15–35.

Memberships: Fellow: INSA 99; NASI 99; TWAS 2001; President: Indian Assn of Sedimentologists • Vice-President: Geological Soc. of India • Councillor: Intl Union of Geological Sci.

Awards & Distinctions: INSA Young Scientists Medal 74 • IGU Krishnan Gold Medal 85 • S S Bhatnagar Award 88 • ISCA K P Rode, Lecture Memorial Award 2000 • 50th Sir Albert Seward Memorial Lecture 2004 • CSIR Foundation Day Lecture 2004 • VII Karunakaran Endowment Memorial Lecture Award 2006 • W D West Memorial Lecture; WIHG, 2009.

Tandon, Shyam Narayan



Elected: 1987
Position: Distinguished Prof., IUCAA, Pune
Specialization: Cosmic Rays; Infra-red Astronomy; Ultraviolet Astronomy; Instrumentation for Astronomy and Space Astronomy
Date and Place of Birth: 6 December 1944; Agra, Uttar Pradesh
Parents: Baijnath Tandon and Muniyadevi
Spouse and Children: Shobhana; two *s*, (Kunj, Nandan)
Address: Inter-University Centre for Astronomy & Astrophysics, Ganeshkhind, Pune 411 007, India
Tel. (020) 2560 4100, (020) 2560 4110 (O), (020) 2569 1977 (R)
email: sntandon@iucaa.ernet.in

Education: Agra Univ.: BSc 60, MSc 62: Univ. of Bombay: PhD 70.

Career: TIFR, Bombay: Res. Assoc. Fellow 63–78, Reader 78–85, Assoc. Prof. 85–91; Inter-Univ. Centre for Astronomy and Astrophys., Pune: Sr Prof. 91–99, Dean of Core Acad. Programmes 94–97; Distinguished Prof. 99–.

Scientific Work: Originated the proposal that changes in the cosmic-rays in the interstellar medium could be consistently explained only if the wide distribution of the path-lengths is modelled, and explained the observed properties of cosmic rays. Developed and used a 1 m aperture balloon-borne telescope, for studying (with 1′.5 resolution) in 50–200 μm band, a number of star forming regions and galaxies. Worked on an experiment which showed that any fifth force which couples to isopin and has a range of > 2 m must be < 10^{-4} of gravitation. Developed instruments for visible astronomy: liquid nitrogen cooled CCD camera, imaging polarimeter, and set up a 2 m optical telescope at IUCAA. Developing a ultraviolet telescope for imaging from space with a resolution < 2 arc seconds.

Important Publications: **(1)** Experimental limits on a possible neutrino degeneracy in the Universe (1964) *Phys. Lett.* **13**, 265. **(2)** Steady state of cosmic-ray nuclei — their spectral shape and path length at low energies (1967) *Phys. Rev.* **158**, 1238. **(3)** Far-infrared brightness temperature of saturn's disk and rings (1982) *ICARUS* **49**, 205. **(4)** A 750 mm balloon borne telescope for far infrared astronomical observations (1984), *J. Phys. E: Sci. Instrum.* **17**, 160. **(5)** Limit on the strength of intermediate range forces coupling to isospin (1988) *Phys. Rev. Lett.* **61**, 2179.

Memberships: Member: Intl Astronomical Union; Astronomical Soc. of India.; Maharashtra Acad. of Sci.

Awards & Distinctions: President: Astronomical Soc. of India 2004–06 • UGC Natl Hari Om Ashram Trust Award 2005 • Sir C V Raman Award.

Taqui Khan, Mirza Mohammad

Elected: 1985
Specialization: Coordination Chemistry; Bioinorganic Chemistry; Catalysis
Date and Place of Birth: 3 November 1931; Hyderabad, Andhra Pradesh
Spouse and Children: Badar, 6 *d* (Zehra, Sheher Banu, Nasreen, Nargis, Fatima, Kusum)
Address: 17-3-479, Yokutpura, Hyderabad 500 023, India
Tel. (040) 2452 4371

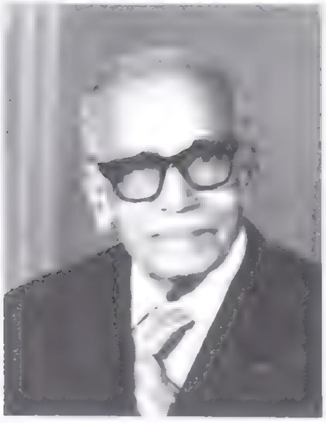
Education: Osmania Univ.: BSc 50, MSc 52; Clark Univ., USA: PhD 62.

Career: Osmania Univ., Hyderabad: Asst Prof. 52–68, Prof. 70, 79–82, Head Dept of Chem. 79–82; IIT Madras: Assoc. Prof. 68–70; P G Centre of Osmania Univ., Warangal: Prof. and Head of Chem. Dept 70–73; Nizam College, Dept of Chem.: Prof. & Principal 73–77, 77–79; Central Salt & Marine Chemicals Res. Inst., Bhavnagar: Dir 82–91.

Scientific Work: In the area of bio-inorganic chemistry, the binding sites of purines, pyrimidines, nucleosides and nucleotides with metal ions were investigated. The coordination chemistry of platinum group metal complexes such as ruthenium, rhodium, osmium, iridium and platinum with a number of nitrogen, phosphorous and arsenic donar ligands were carried out. An important contribution in this area is the investigation of water-soluble complexes of Ru (III) with a number of amino polycarboxylic acids and water molecules.

Memberships: Fellow: NASI 78; INSA 81; Royal Soc. of Chem., London • President: Indian Sci. Congress Chem. Section 86.

Tawde, Nanasaheb Ramji*



Elected: 1934
Specialization: Molecular Spectroscopy; Astrophysics; Chemical Physics
Date and Place of Birth: 15 January 1898; Malwan, Ratnagiri Dist., Maharashtra
Parents: Ramji Raghoji Tawde
Spouse and Children: Shanta Bagwe; four *s*, one *d* (Shishir, Ashok, Vijay, Ajit, Vijaya)
Last Address: Yash Raj, 4, Manisha Co-operative Housing Society, Behind Sessions Court,
P O Adalat Road, Aurangabad 431 001, India
***Deceased:** 25 December 1984

Education: Univ. of Bombay: BA Hons, MSc; Univ. of London: PhD 34.

Career: Karnatak College, Dharwar: Demonstrator in Phys. 22–24; Karnataka Univ., Dharwad: Prof. and Head of Phys. 53–64, Acting Vice-Chancellor 62; Inst of Sci., Bombay: Asst Lecturer in Phys. 24–34, Lecturer 34–46, Prof. of Phys. 46–53: Univ. of Chicago and Califoria, USA: Vis. Prof. 56–57; Marathwada Univ.: Vice Chancellor 64–71.

Scientific Work: The main thrust of research contributions was in the area of determinations of transition probabilities and Franck–Condon factors of diatomic molecules. Was one of the pioneers in establishing spectroscopic research in the country. Studied many diatomic molecules and the main amongst them were C_2, CH, OH, AlO, BeO, CN and N_2 which are of importance in astral and combustion studies. Had a flair for tackling problems of education and administration and contributed significantly to the cause of higher education.

Important Publications: **(1)** Intensity distribution in the molecular spectra: C_2 Swan system (1931) *Proc. R. Soc.* **A137** 575. **(2)** Search for the band spectra of boron fluoride (1931) *Philos. Mag.* **13**, 501. **(3)** Some aspects of gross intensities in electronic bands (1934) *Proc. Indian Acad. Sci.* **A2,** 67–81. **(4)** Intensities in the bands of the violet C.N–system (1936) *Proc. Indian Acad. Sci.* **A3,** 140–147. **(5)** A note on the initial level of the high pressure bonds of carbon (1949) *Bombay Univ. J.* **17,** 32.

Memberships: Fellow: Inst. of Phys., London 38; INSA 42; Inst. of Nuclear Engineers 70; Maharashtra Acad. of Sci. 76 • President: Indian Phys. Soc.

Taylor, Edward McKenzie*

Elected: 1934
Specialization: Agricultural Sciences
Born: 1889
Parents: John George Taylor
Spouse: Marjory Tiver
Last Address: Tregadjack, Mawgan, nr Helston, Cornwall, UK
***Deceased**

Education: Univ. of Cambridge: PhD; Univ. of Durham: DSc; CIE 42.

Career: Univ. of Cambridge, School of Agriculture: Lecturer 26–30; Irrigation Res. Inst., Lahore, Punjab: Dir 30-44; Mil. Engg Res. Stn, Lahore Cantt: Dir 41– European War Service 14–19.

Important Publications: **(1)** Base exchange and the formation of Coal (1928) *Nature* **121**, 789–790. **(2)** Panjab Irrigation Research Institute (1938) *Nature* **141**, 423–424.

Awards & Distinctions: MBE 19

Taylor, Harold John*

Elected: 1937
Specialization: Nuclear Physics; Cosmic Rays; Acoustics
Date and Place of Birth: 18 May 1906; Worksop Nottinghamshire, England
Parents: F G Taylor
Spouse: Jane R Watt
Last Address: 3, Rochester Terrace, Edinburgh EH10 5AA, Scotland
***Deceased:** 27 May 1996

Education: Sheffield Univ., UK: BSc Hons 27, MSc 28; Cambridge Univ., UK: PhD 37.

Career: Wilson College, Bombay: Prof. of Phys. 27–54; Bombay Univ.: Nominated Fellow 39–54; TIFR, Bombay: Prof. of Experimental Phys. 48–51; Scottish Church College, Calcutta: Principal 54–60; Union Christian College, Meghalaya: Principal 60–67; Gauhati Univ.: Vice-Chancellor 62–65.

Scientific Work: Research related to the acoustics of buildings; precision measurement of surface tensions. Studied the nuclear reactions in photographic emulsions; high-altitude cosmic ray with nuclear emulsions. Examined the theory and practice of examinations, especially with regard to validity, reliability and statistical control.

Telang, A V*

Elected: 1934
Specialization: Physics
Last Address: Seshadripuram, Bangalore 560 020, India
***Deceased:** 1965

Education: MA.

Career: Central College, Bangalore: Prof. of Physics.

Thacker, Maneklal Sankalchand*

Elected: 1949
Specialization: Electrical Sciences; Electrotechniques
Date and Place of Birth: 3 December 1904, Ahmedabad
Parents: Sankalchand and Narbadadevi
Last Address: A-2, Seaface Park, Bhulabhai Desai Road, Bombay 400 026, India
***Deceased:** 6 July 1979

Education: Univ. of Bristol, UK: BSc Engg; MIEE, M Inst F, AMIRE.

Career: Bristol Corporation Electricity Dept., UK: Engineer; Calcutta Electric Supply Corporation: Chief Electrical Engineer 31–47; IISc, Bangalore: Prof. of Power Engg, Dir 49–55; Dept. of Sc. & Industry Res., Govt. of India, New Delhi: Dir and Dir General, Additional Secretary 55–64, Planning Commission: Member 64–69.

Scientific Work: Original research in power engineering has been impressive. Research contributions deal with a wide variety of design problems in electrical plant and machinery; thermal hydropower developments and their economics; instrumentation for power installations, etc.

Memberships: Fellow: Royal Inst. of Arts, London • President: Indian Sci. Congress.

Awards & Distinctions: Padma Bhushan 55.

Thakur, R S*

Elected: 1939
Last Address: Laxminarayan Institute of Technology, Nagpur University, Nagpur, India
***Deceased**

Education: Univ. of Nagpur: MSc; Univ. of London: DSc, PhD, FIC, DIC.

Career: Laxminarayan Inst. of Tech., Nagpur: Offr-on-Special Duty.

Thakur, Vikram Chandra

Elected: 1991
Specialization: Structural Geology; Tectonics of Himalayan Geology; Active Tectonics
Date and Place of Birth: 15 January 1940; Dharamsala, Himachal Pradesh
Parents: Shamsher Bahadur Chand and Godavari Devi
Spouse and Children: Bindu Bala; two *d* (Charu, Shuchi)
Address: 9/12 (Lane 9), Ashirwad Eclave, Dehra Dun 248 001, India
Tel. (0135) 252 5216 (O), (0135) 276 1271 (R)
email: bindubthakur@gmail.com, thakurvc@wihg.res.in

Education: Univ. of Panjab: MSc 62; Univ. of Aberdeen, Scotland: MSc 67; Univ. of London: PhD 71, DIC 71.

Career: Govt College, Chamba: Lecturer 62–65; Wadia Inst. of Himalayan Geology, Dehra Dun: Sci. 72–87, Dir. 87–2000, Emeritus Sci. 2000–.

Scientific Work: Regional tectonic framework of Arunachal Himalaya erected. Deformation studies of central crystallines of higher Himalaya and Chamba nappe revealed polyphase reactivation of the upper crust and thrusting of Chamba nappe along MCT. Regional framework and tectonics of Indus suture zone of Ladakh established. Paleotectonic regimes of subduction stage recognized in the Indus suture zone, and a plate tectonic model for the evolution of Himalaya developed. Also worked on seismotectonics of northwest Himalaya. Compiled a geological map of western Himalaya on 1:1 million scale. Also carried out research work in active tectonics and earthquake geology of Himalaya.

Important Publications: **(1)** An overview of thrusts and nappes of Western Himalaya, in Thrust and Nappe Tectonics (1981) *Geol. Soc. London*, Blackwell Scientific Publishers, Oxford, 381–392. **(2)** Tectonic framework of Indus and Shyok Suture zone in eastern Ladakh (1984) *Tectonophysis* **101**, 207–220. **(3)** *Geology of Western Himalaya* (1992) Pergamon Press, Oxford, 366 p., **(4)** Structure of the Chamba nappe and position of the MCT in Kashmir Himalaya (1998) *J. Asian Earth Sci.* **16**, 269–282. **(5)** Seismotectonics of the Great 1905 Kangra earthquake meizoseismal region in Kangra-Chamba, NW Himalaya (2000) *Tectonophysics* **326**, 289–298.

Memberships: Fellow: Geological Soc. of India • Member: American Geophysical Union • President: Coordinating Committee of International Lithosphere Programme.

Awards & Distinctions: National Mineral Award, Govt of India 83–84.

Thangavelu, Sundaram

Elected: 1997
Position: Prof., IISc, Bangalore
Specialization: Harmonic Analysis on Lie Groups; Classical Analysis; Partial Differential Equations
Date and Place of Birth: 17 June 1957; Palappatti, Tamilnadu
Parents: V P Sundaram and Govindammal
Spouse and Children: Umarani; two *d* (Pulari, Manchu)
Address: Department of Mathematics, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2293 3206 (O), (080) 2360 1132 (R)
email: veluma@math.iisc.ernet.in

Education: Madras Univ.: BSc 78, MSc 80, Princeton Univ.: PhD 87.

Career: TIFR: Res. Assoc. 87–90; Fellow 90–93, Reader 93; ISI, Bangalore: Prof. 93–2005; IISc: Prof. 2005–.

Scientific Work: Has made significant contributions to the harmonic analysis on Heisenberg groups, their solvable extensions, symmetric spaces and the study of Hermite and Laguerre expansions. Extensive research in this area resulted in three influential monographs. Some of the most important results include restriction and Paley–Wiener theorems, injectivity of spherical means and characterisation of CR functions, maximal and pointwise ergodic theorems, mean periodic functions, generalised Fock spaces, Segal–Bergman transforms and weighted Bergman spaces. Work on uncertainty principles include complete analogues of Hardy's theorem for SL(2, R), Heisenberg groups and NA groups. Any detailed study of harmonic analysis on Heisenberg groups cannot be done without a good understanding of Hermite and Laguerre expansions. The 1993 Princeton University monograph is widely used by researchers in the field. Results in this area include: proof of Lorch's conjecture in one dimension, partial results to Bochner–Riesz conjecture, complete solution to its local version, study of oscillating multipliers and transplantation theorems. The last mentioned result has been used to give a unified approach to the study of several types of Laguerre expansions. Recent results on heat kernel transforms on Heisenberg groups, nilmanifolds and symmetric spaces are very significant achievements.

Important Publications: **(1)** *Lectures on Hermite and Laguerre expansions* (1993) Math. Notes No. **42**, Princeton University Press, Princeton. **(2)** Harmonic analysis on the Heisenberg group (1998) *Prog. Math.* **159**, Birkhauser, Boston. **(3)** An introduction to the uncertainty principle (2004) *Prog. in Math.* **217**, Birkhauser, Boston. **(4)** Poisson transform for the Heisenberg group and eigenfunctions of the sublaplacian (2006) *Math. Ann.* **335**, 879–899. **(5)** Holomorphic Sobolev spaces associated to compact symmetric spaces (2007) *J. Funct. Anal.* **251**, 438–462.

Memberships: Fellow: INSA 2007; American Mathematical Soc.; Ramanujan Mathematical Soc.

Awards & Distinctions: B M Birla Science Prize 96 • S S Bhatnagar Award 2002 • J C Bose National Fellowship 2008–12.

Thapar, Gobind Singh*

Elected: 1934
Specialization: Helminthology; Zoology
Date and Place of Birth: 15 November 1893; Rawalpindi, now in Pakistan
Parents: Gurdasmal Singh Thapar
Spouse and Children: Parameshwari; one *s*, four *d* (Jagjit Singh, Kamla, Prakash, Sita, Geeta)
Last Address: 227, Mahatma Gandhi Road, Dilkusha, Lucknow 226002
***Deceased:** November 1984

Education: Univ. of Punjab: BSc 15, MSc 17; Univ. of London: PhD 25.

Career: Government College, Lahore: Student Demonstrator 15–17; Islamia College, Peshawar, Dept of Biology: Prof. 17–18; Canning College, Lucknow: Asst Prof. & Head of Zoology 18; Univ. of Lucknow: Lecturer 21–27; School of Tropical Medicine and Hygiene, London: Researcher 23–25; Univ. of Lucknow, Dept of Zoology: Reader 27–49, Asst Prof., Prof. 49–64.

Scientific Work: Discovered new helminths from many animals. Established new classification of Acanthocophala. Studied diseases of domestic animals and discovered the parasites of hump-sore and Nazar granulomma of cattle, while making a survey of parasitic infections of domestic animals in UP, Bihar, Orissa, Bengal and Assam. Established a school of research in helminthology in Lucknow.

Important Publications: **(1)** Studies on the oxyurid parasites of reptiles (1925) *J. Helminth.* **3** 83–150. **(2)** Parasitic worms and diseases: in *Lectures on certain aspects of Helminthology* (1936) Lucknow Univ. Studies **3**, pp. 1–46. **(3)** Review of helminthology in India 1939–50: in *Progr Sci.* (1951) NASI, Allahabad. **(4)** Systematic survey of helminth parasites of domesticated animals in India (1956) *Indian J. Anim. Husb.* **31**, 211–272.

Memberships: Founder-Member and President: Helminthology Soc. of India • Fellow: Zoological Survey of India; INSA 52 • President: Zoological Sec. of Indian Sci. Congress.

Thathachar, Mandayam Anandampillai Lakshmi

Elected: 1987
Specialization: Systems Science; Learning Algorithms; Pattern Recognition
Date and Place of Birth: 20 May 1939; Mysore, Karnataka
Parents: M A Parthasarathy and M A Rukmini
Spouse and Children: Yadugiri; one *s*, one *d* (Jayanth, Malini)
Address: 23, 10th Cross Road, Swimming Pool Extension, Malleswaram, Bangalore 560 003, India
Tel. (080) 2336 7263 (R)
email: maltcharind@yahoo.com

Education: Univ. of Mysore: BE 59; IISc: ME 61, PhD 68.

Career: IIT Madras: Lecturer 61–64; IISc, Bangalore, Dn of Electrical Sci.: Lecturer, Asooc. Prof. 64–78, Prof. 78–2001; Yale Univ., USA: Res. Assoc. 73, Vis. Assoc. Prof. 78–79, Vis. Prof. 88; Sir George Williams Univ., Canada: Res. Assoc. 73–74; Michigan State Univ.: Vis. Prof. 88; Concordia Univ., Montreal: Vis. Prof. 89. Natl Univ of Singapore 97–98.

Scientific Work: Provided a firm mathematical foundation for the design of learning automato algorithms by introducing the concept of absolute expediency and developing necessary and sufficient conditions for the property to hold. Proposed hierarchical structures and teams of learning automata which can be used to form stochastic neural networks for handling complex learning tasks. Worked out the information transfer needed between members of a system of learning automata so that the system converges to the global maximum of a criterion function. Such systems are shown to learn optimal discriminant functions in pattern recognition and also provide a convergent procedure for automatic labelling of objects in a picture, a significant problem in computer vision. Developed novel frequency domain criteria for the stability of a variety of nonlinear and time-varying feedback systems. Furthermore has applied stability results to the design of adaptive systems and has formulated an elegant structural criterion for gain adjustment in a linear system.

Important Publications: (1) *Learning automata: An introduction* (1989) Prentice Hall, Englewood Cliffs. **(2)** *Networks of learning automata: Techniques for online stochastic optimization* (2004) Kluwer Academic, Boston, MA. **(3)** Relaxation labelling with learning automata (1986) *IEEE Transactions on Pattern Analysis and Machine Intelligence*, PAMI-**8**, 256–268. **(4)** Convergence of teams and hierarchies of learning automata (1995) *IEEE Trans. Systems, Man and Cybernetics*, SMC–**25**, 1459–1469. **(5)** Global Boltzmann perceptron network for on-line learning of conditional distributions (1999) *IEEE Transactions on Neural Networks* **10**, 5, 1090–1098.

Memberships: Fellow: IEEE; INSA 89; INAE 91; .

Awards & Distinctions: Bowen Memorial Prize 59 • IISc Alumni Award 92 • Jawaharlal Nehru Award 93 • Distinguished Engineer Award, Institution of Engineers 2000 • Distinguished Alumni Award, IISc 2008.

Thelma, Bittianda Kuttapa

Elected: 2006
Position: Prof., Univ. of Delhi South Campus
Specialization: Human Genetics; Pharmacogenetics; Medical Genomics
Date and Place of Birth: 13 March 1955; Madikeri, Karnataka
Parents: B G Kuttapa and Muthu
Address: Department of Genetics, University of Delhi South Campus,
Benito Juarez Road, New Delhi 110 021, India
Tel. (011) 2411 8201, (011) 2411 7399 (O), (011) 2411 3548 (R)
email: thelmabk@yahoo.co.in,thelmabk@gmail.com

Education: Bangalore Univ.: BSc Hons 73, MSc 75; Univ. of Delhi: PhD 82.

Career: Univ. of Delhi, Lecturer 87–90, Sr Lecturer 90–98, Reader 98–2003, Prof. 2003–.

Scientific Work: Ongoing work in the laboratory focusses on some aspects of human genetics and medical genomics. New gene identification using linkage strategies and candidate gene based association studies in human brain disorders such as schizophrenia, Parkinson's disease and mental retardation are the areas being dealt with currently in the lab. Pharmacogenetics is another area of interest being actively worked and include, pharmacogenetics of common drugs such as antidepressants, levodopa, methotrexate, etc.

Important Publications: **(1)** Associations between common variants in the MDRI gene an ulcerative colitis among North Indians (2009) *Pharmacogenet. Genomics* **19**, 77–85. **(2)** Interaction of genes from influx-metabolism-efflux pathway and their influence on methotrexate efficacy in rheumatoid arthritis patients among Indians (2008) *Pharmacogenet. Genomics* **18**, 12, 1041–9. **(3)** Evidence of allelic heterogeneity for associations between the NOD2/CARD15 gene and ulcerative colitis among North Indians (2007) *Aliment. Pharmacol. Ther.* **26**, 10; 1325–32. **(4)** Genetic susceptibility to tardive dyskinesia among schizophrenia subjects: IV. Role of dopaminergic pathway gene polymorphisms (2006) *Pharmacogenet. Genomics* **16**, 2, 111–117. **(5)** Association of N-acetyl transferase 2 gene polymorphism and slow acetylator phenotype with young onset and late onset Parkinson's disease among Indians (2005) *Pharmacogenet. Genomics* **15,** 10, 731–5.

Memberships: NASI 2003; INSA 2009.

Thiagarajan, Pazhamaneri Subramaniam

Elected: 1995
Position: Prof., Natl Univ. of Singapore
Specialization: System-Level Design Methods for Embedded Systems; Hybrid Systems; Computational Systems Biology
Date and Place of Birth: 9 November 1948; Madras, Tamilnadu
Parents: P V Subramanian and V Mangalam
Spouse and Children: Usha Joshi; one *d* (Vishala)
Address: Department of Computer Science, National University of Singapore,Science Drive 2, Singapore 117 543
Tel. (+65) 6874 7998 (O), (+65) 6774 6356 (R)
email: thiagu@comp.nus.edu.sg; URL: http://comp.nus.edu.sg/~thiagu

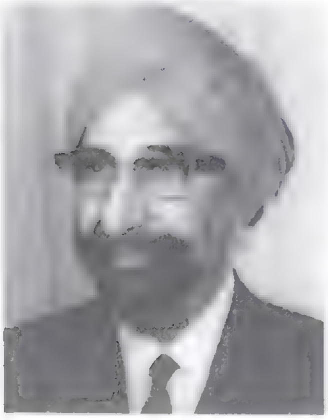
Education: IIT Madras: BTech 70; Rice Univ., Texas: MS 72, PhD 73.

Career: MIT, USA: Res. Assoc. 73–75; Gesselschaft fuer Mathematik and Datenverarbeitung St. Augustin, Germany: Res. Sci. 75–84; Aarhus Univ., Denmark: Assoc. Prof. 84–86; Inst. of Math Sc., Madras: Assoc. Prof. 86–89; Chennai Mathematical Inst.: Prof. 89–2001; School of Computing, Natl Univ. of Singapore Prof. 2001–.

Scientific Work: Extensively worked in the theory of petri nets, including the formulation and study of the basic system model called elementary net systems. Investigations on the relationship between various models of distributed systems such as net systems, transition systems, Mazurklewicz trace languages and event structures. Main interest and contributions have been on temporal and model logics based on partial order executions of distributed systems.

Memberships: NASI 96

Thind, Kartar Singh*



Elected: 1960
Specialization: Mycology; Plant Pathology
Date and Place of Birth: 30 October 1917; Saidpur, Kapurthala, Punjab
Parents: Bhag Singh and Attar Kaur
Spouse and Children: Harjit Kaur; two *d*
Last Address: 2086, Sector 15c, Chandigarh 160 015, India
***Deceased** 3 December 1991

Education: Panjab Univ.: BSc Hons 39, MSc Hons 40; Univ. of Wisconsin, USA: PhD 48.

Career: Regional Potato Development Offr in Himachal Pradesh 49; Panjab Univ., Dept of Botany: Lecturer 49–57, Reader 57–62, Prof. 62–67, Sr Prof. 67–77, Prof. 77–80.

Scientific Work: Best known for work in systematic mycology. Most significant contribution is pioneering and extensive exploration of the mycoflora of the north-western Himalayas (1952–76) and of the eastern Himalayas (1977–86). Besides myxomycetes, several groups of the basidiomycotina and the ascomycotina were collected and described. These include the xylariacea in the pyrenomycetes, the pezizales and the helotiales in the discomycetes, the aphyllophorales (calvarioid, thelephoriod, hydnoid and polyporoid fungi) in the hymenomycetes, and the class gasteromycetes as a whole. Taxa were elegantly and accurately illustrated with anatomical details, an important element of the work. The exploration of the Himalayan mycoflora led to an uncovering of a remarkable number of not only new records, but also description of a number of new species and some new genera too. Also consolidated our knowledge of some of the fungal groups by monographs on clavariaceae and myxomycetes of India.

Memberships: Fellow: NASI; INSA 69 • President: Indian Phytopathological Soc. 72; Indian Botanical Soc. 73; Botany Sec. of Indian Sci. Congress 76; Mycological Soc. of India 79.

Awards & Distinctions: Smith-Mundt Award 60–61 • Panchanan Maheshwari Medal 79.

Thomas, George Kakkudiyil

Elected: 2008
Position: Sci., NIIST, Thiruvananthapuram
Specialization: Photochemistry and Photophysics; Nanostructured Materials; Photoresponsive Materials
Date and Place of Birth: 13 May 1961; Thiruvalla, Kerala
Parents: K I Thomas and Aleyamma
Spouse and Children: Solly; one s (Jerrin)
Address: Photosciences & Photonics Group, National Institute for Interdisciplinary
Science & Technology, Industrial Estate Post, Thiruvananthapuram 695 019, India
Tel. (0471) 251 5364 (O), (0471) 254 2245 (R), Mobile: 98473 56057
email: kgt@vsnl.com

Education: Univ. of Kerala: BSc 81; Univ. of Poona: MSc 83; Univ. of Kerala: PhD 89.

Career: Univ. of Kerala: CSIR Res. Fellow 85–89; RRL (now NIIST) Thiruvananthapuram, Photo Chemistry Unit: Res. Assoc 89–94 , Sci 94–.

Scientific Work: Has made significant contributions in several areas of photosciences and nanomaterials which include design and study of photoresponsive nanomaterials, photosensitizers, photoswitchable molecular systems and fullerene based donor–acceptor systems. Recent efforts in the area of photoresponsive metal and semiconductor nanomaterials are focussed on understanding the interfacial properties of hybrid nanomaterials; integrating nanorods and spheres into higher order assemblies; and use of such functionalized nanomaterials as sensors, light-induced controlled release systems and nanophoshors. More recently has adopted a new paradigm for tuning the optical properties of gold nanorods by organizing them using electrostatic/supramolecular/covalent approaches. The experimental verification of interplasmon coupling in Au nanorods was first demonstrated by integrating nanorods as one-dimensional assemblies (nanochains). Further this strategy was utilized for the selective detection of biologically important molecules. More recently, the self-organization of molecules on two dimensional surfaces was investigated by the group using various microscopic/spectroscopic techniques. The organization of these systems was further modulated by introducing various functional moieties.

Important Publications: **(1)** Preferential end functionalization of Au nanorods through electrostatic interactions (2007) *J. Am. Chem. Soc.* **129**, 6712–6713. **(2)** Functionalized gold nanoparticles as phosphorescent nanomaterials and sensors (2006) *J. Am. Chem. Soc.* **128**, 1907–1913. **(3)** Selective detection of cysteine and glutathione using gold nanorods (2005) *J. Am. Chem. Soc.* **127**, 6516–6517. **(4)** Light induced modulation of self-assembly on spiropyran capped Au nanoparticle: A potential system for the controlled release of amino acid derivatives (2003) *J. Am. Chem. Soc.* **125**, 7174–7175. **(5)** Conformational switching and exciton interaction in hemicyanine based bichromophores (2001) *J. Am. Chem. Soc.* **123**, 7859–7865.

Awards & Distinctions: S S Bhatnagar Prize 2006 • MRSI Medal 2006 • CRSI Bronze Medal 2005.

Thomas, Joseph*

Elected: 1975
Specialization: Nitrogen Fixation; Plant Molecular Biology; Biotechnology
Date and Place of Birth: 20 March 1935; Palai, Kerala
Parents: Kuzhiamplavil Thomas and Annamma
Spouse and Children: Meena; two *d*
Last Address: Centre for Biotechnology, SPIC Science Foundation, 110, Mount Road, Madras 600 032, India
***Deceased:** 30 January 2008

Education: Univ. of Madras: BSc 55; Univ. of Bombay: MSc 58, PhD 62.

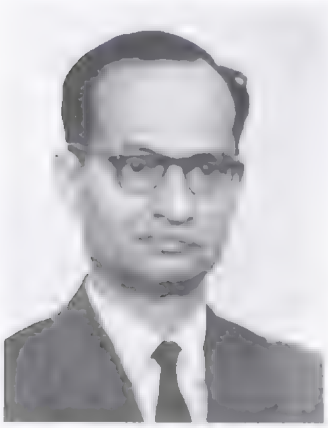
Career: Institute of Sci., Bombay: CSIR Sr Res. Fellow 63–64; Inst. of Microbiology, Czechoslovakia: UNESCO Fellow 64–65; BARC, Bombay: Sci. Offr 66–87; Nitrogen Fixation Lab.: Head 77–87; Michigan State Univ., USA, MSU/ERDA Plant Res. Lab.: Vis. Sci. 74–76; SPIC Sc. Foundation: Dir 87-2004; SPIC Ltd (Biotechnol.): Executive Dir 87–2004; IIT Chennai: Chmn/Adviser, Biotechnology Prof. 2004–06.

Scientific Work: Established the site of nitrogen fixation in cyanobacteria and the pathway of nitrogen metabolism in microbes and plant cells; developed facile procedures for the purification of glutamine synthetases and their regulation in cyanobacteria and rice. Identified and cloned ntr genes leading to the proposal of a bipromoter model for the transcriptional regulation of nitrogenase and to the development of a *Klebsiella* strain constitutive for nitrogenase. The organization of nif genes in cyanobacteria and their rearrangement were other findings. Elucidated sodium metabolism and the mechanisms of salt tolerance in cyanobacteria, especially the role of membrane electrogenesis and osmoregulators. Discovered that legume roots secrete compounds which direct complementary rhizobia in the synthesis of specific polysaccharides involved in recognition and infection of the legume root.

Memberships: Fellow: INSA 84; NAAS.

Awards & Distinctions: FICCI Award 91–92.

Thosar, Baji Vinayak*



Elected: 1959
Specialization: Nuclear Physics; Solid State Physics
Date and Place of Birth: 3 April 1913; Khamgaon, Maharashtra
Parents: Vinayak Narayan Thosar and Savitri
Spouse and Children: Shalini; two *s*, two *d* (Ravindra, Satish, Suneela, Aruna)
Last Address: Nuclear Physics Group, Tata Institute of Fundamental Research, Homi Bhabha Road, Bombay 400 005, India
***Deceased:** 4 July 1998

Education: Univ. of Nagpur: BSc 33, MSc 35; Univ. of Birmingham, UK: PhD 49.

Career: IISc, Bangalore: EM Scholar 35–37; College of Sc., Nagpur: Lecturer, Asst Prof. of Phys. 37–46; Nuffield Labs, Birmingham, UK: KEM Scholar 46–48; TIFR, Bombay: Reader 51–61, Assoc. Prof. 61–63, Prof. 63–78, Emeritus Prof. 78–81, Dean of Phys. Faculty 64–70; Niels Bohr Inst., Denmark: Assoc. 63, 68.

Scientific Work: Research in luminescence of ruby crystals; longitudinal polarization of beta-electrons, after the discovery of non-conservation of parity in beta-decay; *K*-shell internal conversion coefficients in deformed nuclei and studies in nuclear structure physics. Pioneered work on positron annihilation studies in India. Study of positronium decay in condensed materials using free volume model, especially molecular materials like liquid hydrocarbons, organic crystals, before and after irradiation with gamma-rays and neutrons. Studied change in life-times of para- and ortho-positronium of liquids at various temperatures.

Important Publications: **(1)** *Advances in Mossbauer spectroscopy* (1985) Elsevier, Amsterdam. **(2)** *Growing up with Science in India* (1992) Nila Printer, Mumbai **(3)** Gamma-ray energies in the decay of [illegible]CS (1954) *Phys. Rev.* **96** 1022.

Memberships: Fellow: INSA 77; Maharashtra Acad. of Sci. • President: Phys. Sec. Indian of Sci. Congress 69.

Awards & Distinctions: Raman Centenary Gold Medal 88.

Tilak, Bal Dattatraya*

Elected: 1952
Specialization: Organic Chemistry; Dyestuff Tech.; Rural Development through Science and Technology
Date and Place of Birth: 26 September 1918; Karanja, Yavatmal, Maharashtra
Parents: Dattatraya Damodar and Varutai
Spouse and Children: Shashikala; one *s*, two *d* (Shreepad, Sadhana and Vidya)
Last Address: 101, Anand Park, Pune 411 007, India
***Deceased:** 25 May 1999

Education: S P College, Pune: BSc 37; Univ. of Bombay: BSc 39, PhD 43; Queen's College, Oxford, UK: DPhil 46, DSc 60; Harvard Univ.: Postdoc Res. 61.

Career: Univ. of Bombay: Dept. of Chemical Tech.: Reader 48–50, Prof. 50–65; NCL, Pune: Joint Dir 65–66, Dir 66–78; CASTFORD, Pune: Dir 78–91.

Scientific Work: Developed several general synthesis of sulphur, nitrogen and oxygen heterocyclic compounds. A large number of thiophene derivatives were prepared by general synthesis designated in literature by the name reaction 'Tilak thianulation'. New synthetic routes to nitrogen, oxygen and sulphur heterocyclics involving intermolecular hydride transfer and rearrangement reactions were developed. First total synthesis of sulphur, nitrogen and oxygen heterocyclic steroids were reported. Study of mechanism of chemical carcinogenesis by polycyclic hydrocarbons through synthesis of their thiophene isosters and study of their biological activity. Studies of cancer chemotheropeuticals led to the synthesis of five lead sulphur containing compounds which shows significant carcinostatic activity. Synthesized several new dyes for cotton and synthetic fibres. These include novel sulphur, oxygen and nitrogen, heterocyclic chromophoric systems. Played a leading role in the establishment of dyestuff industry in India. Initiated several schemes for rural development and use of energy saving cooking stoves and plant growth promotors in agriculture.

Important Books: **(1)** *Acridine dyes* (1973) John Wiley. **(2)** Sulphur dyes and sulphurised vat dyes: Part 1 (1948) *Proc. Indian Acad. Sci.* **A28** 111–124, Part 2 (1949) *Proc. Indian Acad. Sci.* **A30** 1–11. **(3)** A new synthesis of thiophenes and thiopyrans: Part 1 (1950) *Proc. Indian Acad. Sci.* **A33** 35–41, Part 2 (1950) *Proc. Indian Acad. Sci.* **A33** 71–77. **(4)** Inhibition of tumour growth with thiophene (1959) *Nature* **184** 201.

Memberships: Fellow: INSA 62; Maharashtra Acad. of Sci. 76.

Awards & Distinctions: K G Naik Gold Medal 59 • Basudeo Banerjee Gold Medal 60 • S S Bhatnagar Award 63 • Padma Bhushan 72 • Acharya P C Ray Memorial Medal 76.

Tirumurti, Tirunelveli Subbaiyer*

Elected: 1934
Specialization: Hypertension; Liver Cirrhosis
Date and Place of Birth: 18 November 1885; Pollachi, Tamilanadu
Parents: T N Subbier and Sundari Ammal
Spouse and Children: Sundari; two *s*, one *d*
Last Address: Medical College, Vizagapatnam, India
***Deceased:** 26 August 1953

Education: Univ. Of Madras: MB & CM 09; Univ. of London: DTM & H .

Career: Madras Medical College: Civil Asst Surgeon 05–17, Prof. of Pathology 17–25; Medical College, Vishakhapatnam: Prof. 25–30, Principal 30-31; Stanley Medical College, Madras: Principal; Andhra Univ.: offg Vice-Chancellor 31.

Scientific Work: Contributions pertain to portal hypertension and cirrhosis of the liver and other related disorders in adults. Established that malaria *per se* had no relationship to cirrhosis. Above all when indeed malaria is rampant, the studies on the pathology of infantile chronic biliary cirrhosis, known as Indian childhood cirrhosis, were indeed pioneering. Made an in-depth study of public health practices and policies: accorded priorities to public health, as opposed to curative medicine. Vision of medical research in India was based on in-depth studies of historical contributions of Indian medical thought through the ages.

Memberships: President: Madras Medical & Veternary Sec ISCA 39; All India Med. Assn 52; Vice President: Madras Med. Council.

Awards & Distinctions: Rao Sahib • Row Bahadur

Trehan, Surindar Kumar

Elected: 1978
Specialization: Magnetohydrodynamics; Plasma Physics; Astrophysics
Date and Place of Birth: 4 April 1931; Gujrat, now in Pakistan
Parents: Faquir Chand Trehan and Devki
Spouse and Children: Rama; one *s*, one *d*
Last Address: 146, Sector 9B, Chandigarh 160 009, India
***Deceased:** 9 September 2004

Education: Delhi Univ.: BSc Hons 50, MSc 52; Univ. of Chicago: PhD 58.

Career: Delhi Univ.: Science Exhibition Staff 51–54; Govt of India Scholarship for Studies Abroad: 54–57; Univ. of Chicago: William Rainey Harper Fellow 57-58; Univ. of California, USA: Res. Assoc. 58–59; Princeton Univ., USA: Res. Assoc. 59–61; Panjab Univ.: Lecturer 60–62, Prof. 67–91, CSIR Emeritus Sci. 91–96, INSA Sr Sci.

96–2003; Univ. of Delhi: Reader 62–67; Univ. of Colorado, USA, Jt Inst. for Lab. Astrophys.: Vis. Fellow 70–71; US Natl Acad. for Sc., USA: Sr Resident Res. Assoc. 65–66, 75. William Rainey Harper Fellowship, USA 58.

Scientific Work: Examined the stability of force-free magnetic fields for the first time in 1956 and results have been quoted in various sources. Work on 'magnetic polytropes' gave for the first time a consistent mathematical theory of self-gravitating gaseous masses in the presence of magnetic field. Engaged in the nonlinear stability studies in magnetohydrodynamics with the possibility of applications in astrophysical situations. Given for the first time a consistent account of the modulational stability of bounded systems taking into account the boundary conditions consistently, and without the restriction of flows being confined to be irrotational. Two reviews on plasma oscillations published in 1960 and 1961 constitute the last word on the subject and have formed the basis for many textbook treatment of the subject.

Important Publications: **(1)** On the stability of force free magnetic field (1957) *Astrophys. J.* **126** 429. **(2)** Plasma oscillations I (1959) *Nucl. Fusion* **1** 3, II, (1964) *Nucl. Fusion* **4** 61. **(3)** Rotating self-gravitating fluid spheroid with magnetic field (1974) *Astrophys. Space Sci.* **26** 167. **(4)** Rotating gaesous configurations with magnetic fields (1982) *Contemporary Plasma Physics* (1982) Macmillans, pp. 307–323. **(5)** Some problems in nonlinear stability (1992) *Contemporary Physics* Wiley-Eastern, pp. 127. **(6)** Stability in electrohydrodynamics (2000) *Advances in contemporary physics and energy,* Allied Pub., pp 133–150.

Memberships: Fellow: INSA 76; NASI 78.

Awards & Distinctions: S S Bhatnagar Award 76 • INSA B C Roy Award 89, UGC Natl Lecturer 77–78.

Trivedi, Sandip Parimal

Elected: 2006
Position: Prof., TIFR, Mumbai
Specialization: String Theory; Particle Physics; Quantum Field Theory
Date and Place of Birth: 5 April 1963; Gauhati, Assam
Parents: Parimal Hrushikesh Trivedi and Pratibha
Spouse and Children: Shubha Tole; two s
Address: Department of Theoretical Physics, Tata Institute of Fundamental
Research, Homi Bhabha Road, Mumbai 400 005, India
Tel. (022) 2278 2424 (O), (022) 2280 4710 (R)
email: sandip@tifr.res.in

Education: IIT Kanpur: MSc 85, Caltech, USA: PhD 90.

Career: Institute for Advanced Study, USA: Postdoc Fellow 90–92; Caltech: Postdoc Fellow 92–94; Fermi Natl Accelerator Lab: Assoc. Sci. 94–99; TIFR: Reader 99–2002; Assoc. Prof. 2002–06, Prof. 2006–.

Scientific Work: Broad interests are in string theory, particle physics and related areas. Three areas of research are the study of quantum properties of black holes, understanding the consequences of supersymmetry especially those related to its dynamical breaking, and the study of cosmology in string theory. The AdS/CFT correspondence is suggested by black hole physics. Explored various facets of it. Work on understanding supersymmetry breaking led to models of phenomenological interest where the supersymmetry breaking is mediated by the gauge interactions of the standard model. Constructed new compactifications in string theory where fluxes are excited along the curled up directions. In these, supersymmetry can be broken with control and the resulting spacetimes include de Sitter universes with a positive cosmological constant.

Important Publications: **(1)** de Sitter vacua in string theory (2003) *Phys. Rev.* **D68**, 046005. **(2)** Towards inflation in string theory (2003) *JCAP* **0310**, 013. **(3)** Non-supersymmetric attractors (2005) *Phys. Rev.* **D72**, 124021. **(4)** New models of gauge and gravity mediation (1997) *Phys. Rev.* **D55**, 5508–5519. **(5)** Dual dilaton (1991) *Mod. Phys. Lett.* **A6**, 2677–2686.

Awards & Distinctions: Swarnajayanthi Award 2002 • Natl Sci. Talent Scholar 80–85 • Caltech JS Stemple Award 87.

Tuli, Rakesh

Elected: 1997
Position: Dir, NBRI, Lucknow
Specialization: Genomic and Transgenic Approaches to Improving Plants for Agricultural and Medicinal Applications
Date and Place of Birth: 21 September 1953; Hoshiarpur, Punjab
Parents: Krishan Dev Tuli and Sarla
Spouse and Children: Madhu; one *s*, one *d*
Address: Director, National Botanical Research Institute, Rana Prathap Marg, P.B. No. 436,
Lucknow 226 001, India
Tel. (0522) 220 5848, (0522) 220 8876 (O), (0522) 278 9499 (R)
email: rakeshtuli@hotmail.com, dofficenbri@sify.com

Education: G P Pant Univ. of Agri. & Tech., Pantnagar: BSc 74, MSc 76; Gujarat Univ.: PhD 84.

Career: BARC, Bombay: Sci. Offr 76–92; NBRI, Lucknow: Sci 92–2005, Dir 2005–, Univ. of Chicago, USA: Fellow 80; Univ. of Sussex, UK: NBTB Assoc.

Scientific Work: Worked on molecular details of promoter expression, designing artificial promoters, novel reversible male sterility system for hybrid variety development, crop resistance to insects and drought stress, biochemistry and molecular genetics of agriculturally and medicinally important plants, plant based protein expression systems and edible vaccines, genomic diversity in plants for precision breeding, biological nitrogen fixation, secondary metabolism and regulation of gene expression.

Important Publications: **(1)** Interactions between upstream and core promoter sequences determine gene expression and nucleosome positioning in tobacco PR–1 promoter (2008) *Biochimica et Biophysica Acta* 1779, 634–644. **(2)** Lipid profiling of developing *Jatropha curcas L.* seeds using 1H-NMR spectroscopy (2008) *Biores. Technol.* **99**, 9032–9035. **(3)** Expression of a synthetic Cry1EC gene for resistance against *Spodoptera litura* in transgenic peanut (*Arachis hypogaea* L.) (2008) *Plant Cell Rep.* **27**: 1017–1025. **(4)** Factors promoting efficient *in vitro* regeneration from de-embryonated cotyledon explants of *Arachis hypogaea* L (2008) *Plant Cell Tiss. Org. Cult.* **92**: 15–24. **(5)** Analysis of withanolides in root and leaf of *Withania somnifera* by HPLC with photodiode array and evaporative light scattering detection (2007) *Phytochem. Anal.* **19** (2) 148–154.

Memberships: Hon. Fellow and Life Member: Intl Res. Soc. for Complementary and Alternative Medicine, Toronto • Fellow: NAAS 96; NASI 97; INSA 2002 • Elected Member: Guha Res. Conf..

Awards & Distinctions: IASc Assoc. 86–89 • Sunder Lal Hora Medal, J C Bose National Fellow Award • Science Councillor Award • CSIR Technology Prize • All India Biotech Assoc., AIBA Award • INSA Young Scientist Medal 93.

Tuteja, Narendra

Elected: 2009
Position: Sr Sci., ICGEB, New Delhi
Specialization: Molecular Biology; DNA Replication; Plant Abiotic Stress Tolerance; Signal Transduction, Tissue Culture and Plant Transformation
Date and Place of Birth: 5 January 1955; Lucknow
Parents: Uday Bhan Tuteja
Spouse and Children: Renu; two s (Gaurav, Dhruva)
Address: ICGEB, Aruna Asaf Ali Marg, New Delhi 110067, India
Tel. (011) 2674 2357 (O), (011) 2689 0983 (R), Mobile: 98112 33350
email: narendra@icgeb.res.in; URL: http://www.icgeb.org/pi-tuteja.html

Education: Univ. of Lucknow: BSc 75, MSc 77, Proficiency in French 78, Proficiency in Russian 79, PhD 82, DSc 2008.

Career: K G Med. College, Lucknow: Res. Asst 77–83; NIH, Bethesda: Vis. Sci. 83–86; UCLA, Los Angeles: Post-doc Fellow 86–88; ICGEB, Trieste, Italy: Asst Res. Sci. 88–95; ICGEB, New Delhi: Group Leader and Assoc. Sci. 95–97; Assoc. Sci. 97–2007; ICGEB: Sr Sci. 2008–.

Scientific Work: Development of abiotic stress-tolerant crop plants including rice by genetic engineering approach; isolation and identification of novel function of unidentified genes in abiotic stress tolerance and their functional revalidation in plant and bacterial systems; understanding the molecular mechanism/s of stress tolerance in plant by following two approaches: a). microarray analysis of the stress tolerant plants, and b). isolation and detail analysis of interacting partners of our previously isolated stress tolerant genes/proteins; further enhancement of stress tolerance in plants by pyramiding approach. In order to understand the mechanism of abiotic stress tolerance and ultimately to develop abiotic stress tolerant crops including rice, the group is working on cloning, characterization and modulation of expression of stress-induced genes of the following pathways: 1. Calcium signalling, 2. G-protein signalling, 3. Protein translation initiation (eIF4A, E, etc), and 4. DNA/RNA metabolism (DNA replicative helicases [MCM proteins], DNA repair helicases [XPB, XPD] and p68 RNA helicase). Interacting partners of the stress-regulated proteins and promoter regions of stress-regulated genes are also studied. New initiative have been undertaken to isolate very high salinity stress tolerance genes from a mycorrhiza *Piriformaspora indica* and pea.

Important Publications: **(1)** Heterotrimeric G-protein complex and G-protein-coupled receptor from a legume (*Pisum sativum*): role in salinity and heat stress and cross-talk with phospholipase C (2007) *Plant J.* **51**, 656–669. **(2)** DNA helicase 45 overexpression in tobacco confers high salinity tolerance without affecting yield (2005) *Proc. Natl Acad. Sci.* USA **102**, 509–514. **(3)** Cold and salinity stress-induced pea bipolar pea DNA helicase 47 is involved in protein synthesis and stimulated by phosphorylation with protein kinase C (2005) *Plant J.* **44**, 76–87. **(4)** A pea homologue of human DNA helicase I is localised within the dense fibrillar component of the nucleolus and stimulated by phosphorylation with CK2 and cdc2 protein kinases (2001) *Plant J.* **25**, 9–17. **(5)** A DNA helicase from *Pisum sativum* is homologous to translation initiation factor and stimulates topoisomerase I activity (2000) *Plant J.* **24**, 1–13.

Memberships: Fellow: NASI 2003; INSA 2007; NESA 2009.

Awards & Distinctions: Fogarty Intl Ctr: Vis. Fellowship 83,84,85.

Tyagi, Akhilesh Kumar

Elected: 2004
Position: Dir, Natl. Inst. of Plant Genome Research
Specialization: Genomics; Regulation Biology; Biotechnology
Date and Place of Birth: 15 May 1956; Wairaferozpur, Uttar Pradesh
Parents: B P Tyagi and Kamala
Spouse and Children: Shashi; one *s*, one *d* (Yatin, Geetali)
Address: National Institute of Plant Genome Research, Aruna Asaf Ali Marg, New Delhi 110 067, India
Tel. (011) 2673 5169 (O) (011) 2674 2263 (R)
email: akhilesh@genomeindia.org

Education: Meerut Univ.: BSc 74; Garwal Univ.: MSc 76; Meerut Univ.: MPhil 77; Delhi Univ.: PhD 83.

Career: Delhi Univ.: Reader 88–94, Prof. 94–; Head, Plant Molecular Biology: 88, 92–95, 98–2001; Chmn, Board of Res. Studies in Interdisciplinary & Applied Sci. 95–2003; Centre for Plant Mol. Biol.:Coordinator, 96–2009; Interdisciplinary Centre for Plant Genomics (ICPG): Dir 2005–09; Natl Inst of Plant Genome Res. (NIPGR): Dir 2009–.

Scientific Work: Has made seminal contribution in understanding the regulatory mechanism of gene expression. Has pioneered high-throughput genome-wide sequencing work in India which has already contributed significantly to the completion of the genome sequence and identification of novel genes/markers of rice. Work on genomes of tomato, *Mycobacterium indicus pranii* and sugarcane is in progress. Coordinates a network in the area of functional genomics of rice with specific reference to reproductive development. Based on the conceptual work on gene expression, has cloned and characterized a number of novel and agriculturally important genes as well as regulatory elements. One noteworthy example is the stress-associated zinc-finger protein gene capable of being induced in several abiotic stresses and conferring stress tolerance in transgenics. Among the first Indian scientists to establish genetic transformation of recalcitrant indica rice and produce abiotic stress tolerant transgenic rice. Work on expression of cholera antigens in tomato provided proof-of-the-concept for developing of an oral vaccine in future. Among the few Indian plant scientists who have ventured to bring together knowledge of molecular physiology, genomics, and transgenics to study, analyse and improve crop growth and yield.

Important Publications: **(1)** *Plant Cell* (2002) **14**, 537–545. **(2)** *Proc. Natl Acad. Sci.* (2004) USA **101**, 6309–6314. **(3)** *Nature* (2005) **436**, 793–800. **(4)** *Genome Res.* (2007) **17**, 175–183. **(5)** *Plant Mol. Biol.* (2007) **65**, 467–485.

Memberships: Fellow: NASI 98; INSA 99; NAAS 2001.

Awards & Distinctions: National Bioscience Award 99 • Chmn: DBT-UGC Task Force on Human Resource Development, 2003–06 • NASI-Reliance Industries Platinum Jubilee Award 2006 • Birbal Sahni Medal 2006 • J C Bose National Fellowhip 2007 • B P Pal Memorial Award 2008 • Gen. Sec.: NASI 2006–09 • Vice President: Soc. for Plant Biochem & Biotech 95–2005 • Chmn: PAC Plant Sciences 2007–10 •.

Tyagi, Anil Kumar

Elected: 1995
Position: Prof. and Head, Biochem. Dept, Univ. of Delhi South Campus
Specialization: Molecular Biology; Biochemistry; Microbiology
Date and Place of Birth: 2 April 1951; Anoop Shahar, Buland Shahar, UP
Parents: Ram Dutta Shastri and Sumati Devi
Spouse and Children: Jaya; one *s* (Aniruddha)
Address: Department of Biochemistry, University of Delhi South Campus,
Benito Juarez Road, New Delhi 110 021, India
Tel. (011) 2411 0970, (011) 2411 8434 (O), (011) 2649 2215 (R), Mobile: 93122 66218
email: akt1003@rediffmail.com, aniltyagi@south.du.ac.in

Education: Univ. of Meerut: BSc 70; Univ. of Allahabad: MSc 72; Univ. of Delhi: PhD 77.

Career: V P Chest Inst., Delhi, Dept. of Biochem.: CSIR Res. Fellow 73–78, Natl. Cancer Inst., Natl. Inst. of Health, USA: Intl Vis. Fellow 78–80, Intl Vis. Assoc. 80–83; V P Chest Inst., Delhi: Lecturer 83–86, Univ. of Delhi South Campus: Reader 86–93, Prof. 93– , Head Dept of Biochem 90–93.

Scientific Work: Efforts since the beginning of career have focussed on unravelling the mechanisms associated with the control and amelioration of human diseases. Elucidated mechanism of action and of resistance of the anti-cancer drug, L-alanosine. Also made significant contributions in elucidating the role of polyamines in cell growth and differentiation. Made seminal contributions towards understanding the molecular biology of *Mycobacterium tuberculosis* the organism that causes tuberculosis and is responsible for the loss of more than 50,000 lives every week worldwide. Showed the importance of polyamine biosynthesis as a target for pharmacological intervention. The group has developed a repertoire of genetic tools, which have been extremely useful for a number of investigators in genetic manipulations of mycobacteria. An integration-proficient vector system has been developed, for the stable expression of antigens at different levels for the purpose of developing recombinant BCG vaccines. Also developed candidate DNA vaccines against tuberculosis. Elegant studies on the host-pathogen interaction have led to the identification of *M. tuberculosis* genes involved in the establishment and progression of the disease. His laboratory identified a new operon in *M. tuberculosis,* mymA operon, which is induced at acidic pH and in macrophages. The group demonstrated that the ability of the mutant strain, lacking the activity of mymA operon, to survive in the spleens of guinea pigs is reduced by 800 fold at 20 weeks post infection. Also studied the role of tyrosine phosphatases in the survival of *M. tuberculosis* in host tissues. Developed methods for assay of purine biosynthesis enzymes adenylosuccinate lyase and succino amino imidazole carboxylic acid ribonucleotide synthetase, for automated separation of nucleic acid bases, nucleosides, nucleotides and their precursors, for assay of ornithine decarboxylase, for RNA isolation from mycobacteria and developing mycobacterial plasmid vectors for a range of purposes.

Important Publications: **(1)** Role of mycobacterial kinases and phosphtases in growth and pathogenesis (2008) *The mycobacterial cell envelope*, ASM Press, Washington, 323–343. **(2)** Mycobacterial transcriptional signals: Requirements for recognition by RNA polymerase and optimal transcriptional activity (2006) *Nucl. Acid Res.* **34**, 4245–4257 **(3)** Elicitation of efficient, protective immune responses by using DNA vaccines against tuberculosis (2005) *Vaccine* **23**, 5655–5665. **(4)** Requirement of mymA operon for appropriate cell wall ultrastructure and persistence of *M. tuberculosis* in the spleens of guinea pigs (2005) *J. Bacteriol.* **187**, 4173–4186. **(5)** Disruption of mptpB impairs the ability of *M. tuberculosis* to survive in guinea pigs (2003) *Mol. Microbiol.* **50**, 3, 751–762.

Memberships: Fellow: NASI 92; INSA 2002.

Awards & Distinctions: C R Krishnamurthy Oration • Sibte Hasan Zaidi Oration • Ranbaxy Research Award • Nitya Anand Endowment Lecture Award • S S Bhatnagar Prize • P S Sarma Memorial Award • Kona Sampath Kumar Prize.

Tyagi, Jaya Sivaswami

Elected: 2008
Position: Prof., AIIMS, New Delhi
Specialization: Molecular Biology; Gene Regulation; Mycobacteriology
Date and Place of Birth: 19 May 1954; Lalgudi, Tamil Nadu
Parents: T S Sivaswami and Sita
Spouse and Children: Anil Kumar Tyagi; one *d*, (Aniruddha)
Address: Department of Biotechnology, All India Institute of Medical Sciences,
Ansari Nagar, New Delhi 110 049, India
Tel. (011) 2658 8491 (O), (011) 2649 2215 (R), Mobile: 98104 09761
email: jstyagi@aiims.ac.in

Education: Univ. of Delhi: BSc 73, MSc 75, PhD 79.

Career: V P Chest Inst: Res. Fellow 75–79; NIH, USA: Vis Assoc.; CSIR Centre for Biochemicals: Sci. 83–87; AIIMS: Assoc. Prof. 87–91, Addl Prof. 91–2001; Prof. 2001–.

Scientific Work: Has made original contributions to TB research in the area of novel drug target discovery and in the devlopment of versatile multipurpose diagnostic technologies. The laboratory identified and characterized the DevR-DevS two-component signal transduction system of *Mycobacterium tuberculosis*. DevR is a versatile transcriptional regulator and is required for bacterial adaptation in an *in vitro* model of dormancy. Actively pursuing the characterization of DevRS using a concerted approach involving biochemical, genetic, microbiological tools and animal model. Recent studies demonstrated that interfering with DevR function hindered bacterial survial in laboratory cultured tubercle bacilli. Thus this strategy is a novel means to attack persistent forms of the TB bacillus against, which no drugs are available at present. Has also developed a simple, reliable, robust and efficient multipurpose technology for the efficient laboratory diagnosis of pulmonary and extra pulmonary TB by smear microscopy, culture and PCR.

Memberships: Fellow: NASI 99.

Awards & Distinctions: ISCA New Millenium Science Medal 2000 • Kona Sampath Kumar Memorial Prize 85 • P S Sarma Memorial Award 99 • National Women Bioscientist Award 99.

Udgaonkar, Bhalchandra Madhav

Elected: 1969
Specialization: Theoretical Particle Physics
Date and Place of Birth: 14 September 1927; Karad, Maharashtra
Parents: Madhav Bhairav Udgaonkar and Indira
Spouse and Children: Padma; one s (Jayant)
Address: 705 Vigyan, Scientists' Co-operative Housing Society, Plot No. 23, Sector 17, Vashi,
Navi Mumbai 400 703, India
Tel. (022) 2556 7711 (O), (022) 2789 0807 (R)
email: hbcdir@hbcse.tifr.res.in

Education: Univ. of Bombay: MSc 49.

Career: Research in elementary particle physics with Dr. Homi Bhabha 49; Centre d'E-tudes Nucleaire, France 53–55; BARC Reactor Theory Group, Trombay 55–60; Lawrence Radiation Laboratory, USA: 60–62; Inst. for Advanced Study, USA: 62–63, Argonne Natl Laboratory 63; TIFR, Bombay, Theoretical Phys. Group: Assoc. Prof., Prof., Sr Prof. & Head 63–92; Special Adviser, Planning Commission, Govt. of India; Homi Bhabha Fellowship 81.

Scientific Work: Proposed a phenomenological framework for high energy cross-sections, in terms of Regge poles in the crossed channel which motivated a large number of very accurate measurements of high-energy cross-sections, and much basic and phenomenological work in the 60s and 70s. With Virendra Singh, made some important contributions to the bootstrap approach to hadron dynamics during this period.

Memberships: Fellow: INSA 84 • Member: UGC 73–79; Indian Natl Commission for UNESCO; Indian Council of Social Sci. Res. 80–86.

Awards & Distinctions: President: Indian Phys. Assn 71–73 • Chmn: DAE BRNS 79–86 • Homi Bhabha Centre for Sci. Edn 75–91 • Padma Bhushan 85 • Maharashtra Acad. of Sci. 79–82 • Hari Om Trust Award 89 • Marathi Vigyan Parishad 82–91.

Udgaonkar, Jayant Bhalchandra

Elected: 1997
Position: Sr Prof., NCBS, Bangalore
Specialization: Physical Biochemistry; Protein Folding
Date and Place of Birth: 22 March 1960; Mumbai, Maharashtra
Parents: Bhalchandra Udgaonkar and Padma
Spouse and Children: Sangeeta; one *s*, one *d*
Address: National Centre for Biological Sciences, GKVK Campus, Bangalore 560 065, India
Tel. (080) 2366 6150 (O), (080) 2363 6673 (R)
email: jayant@ncbs.res.in

Education: Bombay Univ.: BSc 79; IIT Madras: MSc 81; Cornell Univ., USA: PhD 86.

Career: Stanford Univ.: Postdoc Fellow 86–89; TIFR NCBS, Bangalore: Reader 90–95, Assoc. Prof. 95–99, Prof 99–, Sr Prof.

Scientific Work: The small protein barstar is being used as an archetypal model protein and its folding pathway is being studied using the tools of protein engineering and physical biochemistry. The thrust is in two distinct but related areas: The complex folding pathway has been dissected into individual steps that involve folding intermediates: and several intermediates have been identified and characterized. These partly folded forms are being stabilized by protein engineering methods as well as by using more stabilizing environmental conditions. Finally, structural characterization of folding intermediates is being carried out using a combination of protein engineering, chemical modification and amide hydrogen exchange methods, that are being used is conjunction with rapid chemical kinetic methods. Physical interactions that are crucial in the determination of tertiary structure as well as stability are being identified by protein engineering methods. Special emphasis is being placed in developing rational methods to increase protein stability.

Memberships: Fellow: INSA 2002.

Awards & Distinctions: IASc Assoc. 91–95 • Jane Coffin Childs fellow 86–89 • Rockefeller Foundation Biotech career Fellow 91–95 • The Protein Sec. Bristol-Myers Squibb Jr Faculty Award 95.

Uma Shaanker, Ramanan

Elected: 1992
Position: Assoc. Prof., UAS, Bangalore
Specialization: Plant Evolutionary Biology; Plant Stress Physiology; Crop Physiology Forest Genetic Diversity; Conservation Biology
Date and Place of Birth: 19 March 1956; Jabalpur, Madhya Pradesh
Parents: K S V Ramanan and Nagalakshmi
Spouse and Children: Mythily; one *d*
Address: Department of Crop Physiology, University of Agricultural Sciences, GKVK Campus,
Bangalore 560 065, India
Tel. (080) 2363 6350, (080) 2363 6713 (O), (080) 2856 5620 (R), Mobile: 98452 03561
email: rus@vsnl.com, umashaanker@gmail.com

Education: Univ. of Agri. Sci., Bangalore: BSc 76, MSc 80, PhD 85.

Career: All India Coordinated Res. Programme on Oilseeds (sunflower), UAS, GKVK, Bangalore: Res. Sci. 79, Jr Physiologist 83, Asst Prof.

Scientific Work: Has been instrumental in extending the principles of sociobiology to plant reproductive ecology. Advanced theoretical arguments and experimental evidence to explain the evolution of a range of plant reproductive features such as seed number per fruit, polyembryony, pollen donation and reception strategies, seed and fruit dispersal and seed dormancy. Provided rigorous experimental evidence for the existence of sexual selection in plants. Demonstrated that seed abortion within multiovulated fruits in plants is a consequence of rivalry among developing seeds (sibs); this discovery led to the understanding of the physiological basis of seed abortion in plants and in increasing the seed set in some systems. Attempted to explain the process of seed development in fruits based on the process of self-organization. Also contributed to the understanding of plant responses to moisture stress. Developed rapid protocols for screening sunflower germplasm for drought tolerance and has been instrumental in developing sunflower hybrids resistant to moisture stress.

Memberships: Fellow: Indian Soc. for Plant Physiology & Biochem.; Indian Chapter of the International Union for the Study of Social Insects • Fulbright Fellow: Univ. of Massachusetts, USA 91.

Umapathy, Siva

Elected: 2004
Position: Prof., IISc, Bangalore
Specialization: Laser Spectroscopy; Photochemistry; Ultrafast Dynamics
Date and Place of Birth: 10 June 1959; Thanjavur, Tamil Nadu
Parents: V Sivasubramanian and S Jayalaksmi
Spouse and Children: Shanti; one s
Address: Department of Inorganic & Physical, Chemistry, Indian Institute of Science,
Bangalore, 560 012, India
Tel. (080) 2360 1234, (080) 2293 2595 (O), (R), Mobile: 94480 88381
email: umapathy@ipc.iisc.ernet.in

Education: Madras Univ.: BSc 79; MSc 81; Univ. of Otago, New Zealand, PhD 86.

Career: IISc: Lecturer 90–93, Asst Prof. 93–99, Assoc. Prof. 99–2005, Prof. 2005–.

Scientific Work: The group specializes in the area of chemical dynamics using experimental and theoretical spectroscopic methods. Research contributions include: Femtosecond azobenzene isomerization dynamics from resonance Raman (RR) intensities and wave packet dynamics (WPD) simulation; density functional theory (DFT) applied to understanding structures of reactive intermediates from normal modes and vibrational frequencies observed in the time resolved resonance Raman (TR3) experiments; influence of static (from TR3 and DFT) and dynamic (from RR and WPRD) solvent effects in molecular conformational dynamics in triplet excited state and isomerization dynamics, respectively and simulation of experimental RR intensities for the triplet excited states from TR3 experiments and a combination of WPD and time dependent DFT. This research work led to quantitative understanding of fundamental molecular processes in chemical dynamics.

Awards & Distinctions: Swarnajayanthi Fellow Gold Medal 99 • CRSI Bronze Medal 2004 • Best Alumni Award, Gold Medal 2004.

Uppal, Badri Nath*

Elected: 1940
Specialization: Plant Pathology; Microbiology; Agriculture
Date and Place of Birth: 28 June 1900; Eminabad, Gujranwala, Pakistan
Parents: Mukand Lal Uppal and Mathura Devi
Spouse and Children: Ram Rakhi; one *s*, one *d* (Vinod, Leela)
Last Address: 223, Sector 9-C, Chandigarh 160 009, India
***Deceased:** 22 November 1989

Education: Panjab Univ.: BSc 18, MSc 19, Iowa State Univ., USA: PhD 25.

Career: Iowa State Univ., USA: Instructor of Botany 22–25, Govt. of Bombay: Plant Pathologist 26–43; College of Agriculture, Poona: Prof. of Plant Pathology and Principal 43–47; Dir of Agri., Bombay: 48–52; Govt. of India: Agricultural Commissioner 52–60.

Scientific Work: Established the plant virus research centre at Poona for investigation of plant virus diseases, and a wheat rust research centre at Mahabaleswar, for the development of wheat varieties resistant to black rust. The cotton wilt centre was set up at Poona for the isolation of wilt-resistant varieties of cotton under controlled conditions. Cross-commodity regional stations were also established in the country for intensive research on cotton, oilseeds and millets. Was instrumental in framing the agricultural programme of the second Five Year Plan, and also prepared a fertilizer plan for the manufacture of different kinds of fertilizers in the country. Reoriented and expanded work on soil conservation at the Centre, by setting up research and traning stations in different regions of the country. Initiated an all-India soil survey, under soil correlators for different soil types.

Memberships: Fellow: INSA 52; Indian Phytopathological Soc.

Awards & Distinctions: Padma Shri 59 • MBE 45 • Iowa State Univ. Centennial Award 58 • Punjab Agric. Univ.: DSc (hc) 70.

Vaidhianathan, V I*

Elected: 1934
Specialization: Magnetism; X-rays; Engineering
Date and Place of Birth: 28 August 1897; Chalakudi, Kerala
Children: three *s*
Last Address: W2/2, Patel Road, Patel Nagar, New Delhi 110 012, India
***Deceased:** 1965

Education: Univ. of Madras: MA 20, DSc 30.

Career: IACS, Calcutta: Res. Fellow 25; Forman Christian College, Lahore: Prof. of Phys. 30–32; Irrigation Res. Inst., Lahore: 32–45, 46–47, 49; Dir of Irrigation Res., Madras: Dir 45–46; Ministry of Agri., New Delhi: Dy Dir 47–49.

Scientific Work: Worked with C V Raman in the 1930s, carrried out a series of important research in magnetism and X-rays. These relate to diamagnetic orientation of molecules, diamagnetism of vapour of organic compounds and to change of diamagnetism with change of state. Also studied X-ray diffraction in liquids and its relation to temperature. Then shifted interest to applied science and studies related to structural designs of weirs, dams and canals, evolving apparatus for accurate analysis of silt grades for the development of electrical analogy method for design of weirs and for observing certain important capillary phenomenon in soils in relation to the movement of water table in subsoils.

Memberships: Member: CSIR Building Res. Committee.

Vaidya, Prahlad Chunilal

Elected: 1975
Specialization: General Relativity; Gravitation
Date and Place of Birth: 23 March 1918; Shahpur, Gujarat
Parents: Chunilal Vaidya and Nirmal
Spouse and Children: Vidyadevi; four *d* (Kumud, Smita, Darshana, Hina)
Address: 34, Shardanagar, Ahmedabad 380 007, India
Tel. (079) 2661 0893 (R)

Education: Univ. of Bombay: BSc 38, MSc 40, PhD 48.

Career: Dharmendra College, Rajkot: Lecturer in Maths 40–41; Ahimsak Vyam Sangh, Bombay: Principal 41–42; BHU, Varanasi: Res. Student 42–43; MTB College, Surat: Lecturer in Maths, Prof. 43–47; TIFR, Bombay: Res. Assoc 47–48; V P College, Vallabh Vidyanagar: Prof. of Maths, Vice-Principal 48–55; Gujarat College, Ahmedabad: Prof of Maths 55–58; M N College, Visnagar: Principal 58–59; Univ. School of Sc., Gujarat Univ., Dept of Maths: Prof. 59–71, Vice Chancellor of Gujarat Univ. 78–80; Gujarat Public Service Commission: Chmn 71–77; Union Public Service Commission: Member 77–78; Washington State Univ. 64–65, London Univ. 70, Dublin IAS 70: Vis. Prof.

Scientific Work: During 1943–53 obtained an exact solution of Einstein's equation of general relativity which describes the gravitational field of a star which profusely radiates energy. It so happened that during 1963–64, quasars were discovered; it was found that the solution discovered proved useful in understanding their gravitational field and the metric giving this solution came to be known as `Vaidya metric'. This metric is now extensively used in gravitational situations arising in high energy astrophysics. In order to understand the gravitational field of a star which not only radiates energy but also rotates about an axis, studied the geometry of null curves and in collaboration with L K Patel used this geometry to derive the metric describing this gravitational field.

Important Publications: **(1)** *A textbook of elementary mechanics* (1954) Charotar Book Stall.

Memberships: Fellow: INSA 88 • President: Indian Mathematical Soc.; Calcutta Mathematical Soc.; Indian Assn for General Relativity and Gravitation.

Awards & Distinctions: Vikram Sarabhai Award 92 • President: Indian Math. Soc. 75–77; Calcutta Math. Soc. 82–83, Member: UPSC 77–78.

Vaidyanathan, Chelakara Sivarama*

Elected: 1978
Specialization: Molecular Enzymology; Plant Biochemistry
Date and Place of Birth: 14 November 1931; Palghat, Kerala
Parents: C V Sivarama Iyer and S A Lakshmi
Spouse and Children: K H Visalakshi; one *s*, one *d* (Sivaram, Jayalakshmi)
Last Address: Department of Biochemistry, Indian Institute of Science, Bangalore 560 012, India
***Deceased:** 1 September 1999

Education: Madras Univ.: BSc 50, MSc 52, IISc: PhD 54.

Career: IISc, Bangalore, Dept of Biochem.: Lecturer 60–65, Asst Prof. 65–69, Prof. 69–92, CSIR Emeritus Sci. 92–97.

Scientific Work: Has contributed to the understanding of the metabolism of aromatic compounds, elucidated several new pathways and discovered new enzymes with novel types of mechanism of action. Demonstrated for the first time the ring fission of aromatics by plant enzymes. Obtained evidence for the involvement of superoxide anions in certain enzyme-catalysed oxidation reactions.

Important Publications: **(1)** A colorimetric method for determination of pyrocatechol and related substances (1964) *Anal. Biochem.*7 315–321. **(2)** A study of the purification and properties of tryptophan synthatase of bengal gram (1964) *Arch. Biochem. Biophys.* **104** 405–415. **(3)** Purification and properties of an inhibitor for nicotinamide adenine (1966) *Arch. Biochem. Biophys.* **113** 376–382 **(4)** Studies on the nucleotidases in plants:

Isolation and properties of the manomeric form (1977) *Eur. J. Biochem.* **78** 95–102. **(5)** Studies on *A. niger* glutaminenynthdase (1984) *J. Biosci.* **6** 17–35.

Memberships: Fellow: INSA 82; Assn of Microbiologists; Chem. Soc. London, Soc. of Exp. Biol. London.

Awards & Distinctions: P S Sarma Memorial Award 75 • UGC J C Bose Award 76.

Vaidyanathan, M*

Elected: 1935
Last Address: Imperial Council of Agricultural Research, Delhi, India
***Deceased**

Education: MA, FSS.

Career: Imperial Council of Agricultural Res., Delhi: Statistician.

Vaidyanathaswamy, R*

Elected: 1934
Specialization: Mathematics
Date and Place of Birth: 9 October 1894, Sethalpathy, Tanjore, Tamil Nadu
Parents: Ramaswamy Iyer and Dharmambal
Spouse and Children: Kaveri Ammal; two *s*, two *d*
Last Address: Department of Mathematics, Sri Venkateswara University, Tirupati, India
***Deceased:** 17 March 1960

Education: Univ. of Madras: BA Hons 15, MA 17, PhD; Univ. of St Andrews: DSc 25.

Career: BHU, Varanasi: Teacher 25; Univ. of Madras: Res. Scholar, Reader in Mathematics, Prof. 27–52; ISI, Calcutta: 52; Sri Venkateswara Univ., Tirupati: Prof. of Mathematics 55; ISI, Calcutta.

Scientific Work: Contributed extensively to point-set topology. Studied the pedal line property of the triangle and its generalization to a cyclic *n*-gon, normals from a point to a conic and to a quadric, porisms of triangles and polygons inscribed in one conic and circumscribed to another the rational normal curve and incidence results in *n*-dimensions and similar topics. Was also intensely interested in the theory of forms, binary and multiple binary forms and their invariant theory.

Important Publications: **(1)** *Set topology* (1947) Dora Publications. **(2)** The algebra of cubic residues (1985) *J. Indian Math. Soc.*, **21**, 57–66.

Memberships: Royal Soc. of Edinburgh 24.

Vairamani, Mariappanadar

Elected: 2000
Position: Dir, Inst. of Pesticide Formulation Tech, Gurgaon
Specialization: Organic Mass Spectrometry ; Organic Chemistry
Date and Place of Birth: 23 February 1950; Virudhnagar, Tamil Nadu
Parents: M Mariappa Nadar and M Mangalam
Spouse and Children: V Maithili; one *s*, one *d*
Address: Institute of Pesticide Formulation Technology, Sector 20, Udyog Vihar, Gurgaon 122 016, India
Tel. (0124) 234 7788 (O), (0124)236 0862 (R), Mobile: 99536 29758
email: mvairamani@hotmail.com, URL: www.ipft.gov.in

Education: Madurai Univ.: BSc 70, MSc 72; IIT Madras: PhD 77.

Career: VHNSN College, Virudhunagar: Demonstrator 72–73; NCL: Sr Sci. Assoc. 77–79; Brooklyn Polytechnique, USA: Res. Assoc. 79–81; Stanford Univ., USA: Res. Assoc. 81–82; RRL (now IICT) Hyderabad: Head, Anal. Chem. Dn: Sci: and Head 82–2007; IPFT, Gurgaon: Dir 2007–.

Scientific Work: Research interests are in studying ion molecular reactions in the gas phase using mass spectrometric techniques such as chemical ionization, fast atom bombardment, electrospray ionization, and laser desorption. Developed many new chemical ionization reagents such as acetone, nitromethane, 1, 2-dibromoethane, and ethylene glycol for differentiation of isomeric compounds. Showed that naturally occurring sugars can be used as chiral matrices to differentiate chiral amino acids and amines. Has measured the proton affinities of three isomeric hexosamines, and N-acetylhexosamines for the first time using the kinetic method. Recently has shown that DNA triplet GCA can be used as a chiral selector for the discrimination or D- and L-amino acids under electrospray ionization mass spectrometry. Collaboration work with NGRI scientists resulted in finding fullerenes in low grade metamorphosed proterozoic shungite from Karelia, Russia which is a significant contribution towards the formation of fullerenes in nature.

Important Publications: **(1)** Occurrence of natural fullerenes in low grade metamorphosed proterozoic shungite from Karelia (1998) *Russia Geochem. Cosmo Chem. Acta.* **62**, 3541. **(2)** G-quadruplex formation of thrombin binding aptamer detected by electrospray Ionization mass spectrometry (2003) *J. Am. Chem. Soc.* **125** (1), 42. **(3)** Simple method to differentiate underivatized diastereomeric hexosamine monosaccharides and their quantification in a mixture using the kinetic method under electrospray ionization conditions (2004) *Anal. Chem.* **76**, 3505. **(4)** Mass spectral analysis of chloropicrin under negative ion chemical ionization conditions (2005) *Anal. Chem.* **77**, 3406. **(5)** Chiral discrimination of amino acids by DNA triplet GCAα3406–3410 (2007) *Chem. Commun.* **4**, 392–394.

Awards & Distinctions: Chemito Award 2005 • CRSI Bronze Medal 2006.

Vakil, Kapilram*

Elected: 1934
Specialization: Chemical Engineering
Date of Birth: 28 May 1884
Last Address: Ami, 7th Road, TPS III, Santacruz-East, Bombay 400 055, India
***Deceased:** 29 January 1946

Education: Univ. of Bombay: BA; Univ. of Manchester: MSc.

Career: Tata Chemicals Ltd., Mithapur: Sr Chemical Engg; Saurashtra Chemicals: 27 years, President; Gujarat Heavy Chemicals Ltd., Gujarat Machinery Manufactures Ltd.; Dhrangadhra and Humphreys and Glasgow Consultants Pvt. Ltd., Bombay: Consulting Engg; Steel Africa Ltd: Adviser.

Scientific Work: Pioneer of salt, marine and heavy chemicals like alkalies in India. Proved to be a consultant par-excellence in the field of salt and alkali industry. Was one of the earliest chemical engineers to think of hydrogenation of oils and fats. Another major contribution was in the utilization of salt and the by-products of the salt industry. Initiated the manufacture of magnesium chloride from salt bitterns at Kharagoda as also the manufacture of bromine from sea water. Was instrumental in setting up the huge alkali factory in Dharangadhara and the Tata Chemicals plant at Mithapur. Involved in planning, execution, commissioning and management of soda ash, caustic soda, refined bicarbonate plants and designing and execution of four solar salt works.

Vakil, Rustom Jal*

Elected: 1943
Specialization: Cardiac Research
Date and Place of Birth: 17 July 1911; Bombay
Parents: Jal Vakil and Jerbanoo
Spouse: Jeroo
Last Address: Roxana, 109, Queen's Road, Bombay 400 020, India
***Deceased:** 20 November 1974

Education: Univ. of London: MRCS, LRCP 34, MBBS 34, MRCP 36, MD 37, DTM & H 38.

Career: J J Hospital: Hon. Asst Physician; Grant Med. College: Lecturer in Medicine; Parsee General Hospital: Hon. Physician; King Edward Memorial Hospital: Hon. Physician; G S Med. College: Lecturer in Medicine.

Scientific Work: Was the first to carry out large scale statistical studies on the incidence of various types of heart diseases especially coronary heart disease. Coined the term `pre-infarction syndrome' resulting from a study of 360 cases of coronary heart diseases. Was responsible for the study of normal electrocardiographic standards and normal blood pressure standards with special reference to young age groups. Studied some of the new clinical entities in medical science such as hexalogy of the heart, giant cell arteritis in aortic regurgitation, transitory pulsation in coronary thrombosis, gummatous forms of rat-bite fever and subacute pulmonary oedema. Introduced a new classification for abnormal heart rhythms and made practical suggestions for starting a drive against coronary or atheromatous heart disease.

Memberships: Fellow: INSA 59; Royal College of Physician; American College of Cardiology; American College of Physicians; American Geriatrics Soc.; Royal Soc. of Health; American Assn Advancement of Science; Royal Soc. of Tropical Medicine; Royal Soc. of Arts; Royal Soc. of Medicine; Intl Acad. Chest Physicians; American College of Post-graduate Studies.

Awards & Distinctions: American Public Health Assn Albert Lasker Award 49 • Padma Bhushan 58 • B C Roy Award 69 • S S Bhatnagar Award 73 • Dhanwantri Award 73.

Valdiya, Khadg Singh

Elected: 1980
Position: Hon. Prof., JNCASR, Bangalore
Specialization: Sedimentary Geology; Tectonics; Environmental Geology
Date and Place of Birth: 20 March 1937; Kalaw, Burma
Parents: Deb Singh and Nanda Devi
Spouse and Children: Indira, one s (Sameer)
Address: Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur, Bangalore 560 064; India
Tel. (080) 2208 2787 (O), (080) 4112 0784 (R) Mobile: 98970 78756
email: valdiya@jncasr.ac.in

Education: Lucknow Univ.: BSc Hons 56, MSc 57, PhD 63.

Career: Lucknow Univ.: Lecturer in Geology 57–69; Rajasthan Univ.: Reader in Geology 69–70; Wadia Inst. of Himalayan Geology: Sr Sci. Offr 70–73, Dy Dir 73–76, Additional Dir 80; Kumaun Univ., Nainital: Prof. and Head of Dept. 76–95, Dean 77–80, Vice-Chancellor 81, 84, 92; JNCASR, Bangalore: Prof. 95–97, Bhatnagar Res. Prof. 97–2003, INSA Golden Jubilee Res. Prof. 2003–08; Johns Hopkins, USA: Postdoc Res. (Fulbright Fellow) 65–66.

Scientific Work: Made significant contributions to Himalayan geology through sustained comprehensive study of Kumaun Himalaya. Pioneering study of algal stromatolites leading to fixation of age of a crucial stratigraphic horizon, systematic investigation of economically rich magnesite deposits, sedimentological and palaeocurrent study of the precambrian flysch, and structural studies of geodynamically sensitive areas in thrust zones. Contributing significantly to the tectonic synthesis and evolutionary history of the Kumaun Himalaya. Recent endeavours relate to active faults and landform development and geomorphic reshaping related to neotectonics. Environmental studies include occurrence of and coping with hazards of landslides, and the problems of erosion in the mountains in the context of tectonics and seismicity; work on mass-wasting on unstable slopes and geohydrology of mountain springs have great bearing in environmental management and planning for ecological integrity of the mountains; special studies related to environmental implications of developmental activities.

Important Publications: **(1)** *Geology of the Kumaun Lesser Himalaya* (1980) Wadia Inst. of Himalayan Geol., 291p. **(2)** *Environmental Geology: Indian Content* (1987) Tata-McGraw Hill, New Delhi, 583p. **(3)** *Dynamic Himalaya* (1998) Univ. Press, Hyderabad, 186p. **(4)** Simla Slates: Its turbidities, sedimentary structure and palaeo currents (1920) *Geol. Soc. Am. Bulletin* **81**, 451–468. **(5)** Himalayan transverse faults and folds and their parallelism with subsurface structures of North Indian Plains (1976) *Tectonophysics* **32**, 235–286.

Memberships: Fellow: GSI 62; INSA 80, NASI 87; TWAS 95 • Hon. Fellow: Geol. Soc. Nepal 2001; Geol. Soc. Am. 2001.

Awards & Distinctions: S S Bhatnagar Award 76 • L Rama Rao Gold Medal 77 • Pant National Environment Fellow 82–84 • S K Mitra Award 91 • GOI, Natl Mineral Award 93 • D N Wadia Medal 95 • National Mineral Awards for Excellence 97 • BHU: DSc hc (2003) • Padma Shree 2007 • HindiSev Samman (Atma Ram) Prize 2007.

Valiathan, Marthanda Varma Sankaran

Elected: 1977
Position: Natl Res. Prof., Manipal Univ.
Specialization: Cardiac Surgery; Cardiovascular Materials; Ayurveda
Date and Place of Birth: 24 May 1934; Mavelikara, Kerala
Parents: Marthanda Varma and Janaki
Spouse and Children: Ashima; one *s*, one *d* (Manish, Manna)
Address: Manipal University, Madhav Nagar, Manipal 576 104, India
Tel. (0820) 292 2342, 257 1201/22342 (O), (0820) 257 0491 (R), Mobile: 94483 81547
email: ms.valiathan@manipal.edu, msvaliathan@gmail.com

Education: Univ. of Kerala: MBBS 56; Royal Colleges of Surgeons of Edinburgh & England: FRCS 60; Univ. of Liverpool, UK: MS 62; Royal College of Physicians and Surgeons, Canada: FRCS 70.

Career: Postgraduate Med. Inst., Chandigarh: Sr Lecturer 63–65; Georgetown Univ. Hospital, USA: Instructor in Surgery 68–72; Safdarjung Hospital, New Delhi: Cardiac Surgeon 72–73; Railway Headquarters Hospital: Consultant; IIT Madras: Vis. Prof. 73–74; Sree Chitra Tirunal Inst. for Med. Sci. and Technol., Thiruvananthapuram: Prof. of Cardiac Surgery and Dir 74–94; Manipal Univ., Manipal: Vice-Chancellor 94–99; Hon. Adviser 99–2005, Natl Res. Prof. 2006–.

Scientific Work: Responsible for shifting the aetiological focus in endomyocardial fibrosis from the eosinophil to the nontraditional context of geochemistry. Studies by the group showed the deficiency of magnesium and higher concentrations of cerium in the cardiac tissues of patients and produced evidence for the enhancement of cerium concentration by magnesium deficiency, stimulation of collagen synthesis by nanomolar concentrations of cerium, the effective replacement of magnesium by cerium in enzymatic reactions and cardiac morphological changes in rats maintained on a magnesium deficient and cerium adulterated diet. Characterized GBH surface and collaborated with Gott in establishing the principle of wall-bonded heparin for clinical applications; developed GBH coated shunt for temporary bypass during thoracic aortic operations. Formulated guidelines for surgery in endomyocardial fibrosis on the basis of a large personal series. Interest in materials for cardiovascular applications was instrumental in his group developing the blood bag, oxygenator, cardiotomy reservoir, prosthetic heart valve and a vascular graft and establishing the nucleus for medical devices industry in India. Organised coordinated research projects as part of a science initiative in Ayurveda in scientific and Ayurvedic institutions at the national level, which sought to apply the methods of modern science to study ancient medical concepts and procedures.

Important Publications: **(1)** *Endomyocardial fibrosis* (1993) Oxford Univ. Press . **(2)** *The legacy of Caraka* (2003) Orient Longman. **(3)** *The legacy of Suśruta* (2007) Orient Longman. **(4)** *The legacy of Vagbhata* (2009) Universities Press.

Memberships: Fellow: INSA 84; NASI 88; TWAS 98; Am. Coll. of Cardiology (FACC) 85; Roy. Coll. of Physicians of London (FRCP, London) 99. • Member: Indian Assn of Cardiothoracic Surgeons; Cardiological Soc. of India; Soc. of Thoracic Surgeons, USA; Soc. of Cardiothoracic Surgeons of UK; Asia Pacific Acad. of Materials.

Awards & Distinctions: Kerala State Award for Sc. & Technol. • R D Birla Award in Medical Sci. • Om Prakash Bhasin Award • Shri Dhanwantari Prize • Basanti Devi Amir Chand Prize • Aryabhatta Medal • Jawaharlal Nehru

Award for Science • Shri Gujar Mal Modi Award • J C Bose Medal • Samuel P Asper Award, Johns Hopkins Institutions, USA • Chevalier in the Order of Palmes Academiques, French Government • Padma Vibhushan.

Valluri, Sitaram Rao

Elected: 1971
Specialization: Metal Fatigue
Date and Place of Birth: 25 June 1924; Kakinada, Andhra Pradesh
Parents: Narasimha Rao and Rajeswaramma
Spouse and Children: Shyamala; one *s*, one *d*
Address: Prashanthi, 659, 100 Feet Road, Indiranagar, Bangalore 560 038, India
Tel. (080) 2525 8294 (R)
email: srvalluri@eth.net

Education: BHU, Varanasi: BSc 46; IISc: DIISc 48; Caltech., Pasadena: MSc 50, PhD 54.

Career: Caltech, USA: Res. Fellow 54–63, Consultant to Aircraft Companies; IIT Madras, Dept of Aeronautics and Applied Mechanics: Prof. and Head 63–65; Natl Aeronautical Lab., Bangalore: Dir 65–84; Aeronautical Development Agency, Ministry of Defence, Bangalore: Dir General 84–85.

Scientific Work: Involved in research of metal fatigue and fracture at a time when the emphasis in research was shifting from studies in bulk failure to gradual crack propagation due to fatigue. Combined these two approaches by imposing the limiting crack length criterion for catastrophic crack propagation as defined by the Griffith theory of cracks. As a result, many aspects of bulk fatigue failure for which various empirical formulations were being evolved were found to be unnecessary. These studies included evolving concepts based on dislocation theory of metals and developing a linear fatigue crack propagation theory. While in the US, was involved in studies of fast propagating cracks by developing and using a camera capable of a tenth of a microsecond exposure time and speeds up to 250,000 frames per second. Was primarily involved in building NAL over a 19-year period as an institution to tackle R&D problems related to flight vehicle airframe development. In ADA, was mostly responsible for setting up the organization structure and management systems to develop the light combat aircraft.

Awards & Distinctions: Wright Brothers Medal 63.

Vankar, Yashwant Dattatraya

Elected: 2002
Position: Prof., IIT, Kanpur
Specialization: Synthetic Organic Chemistry; Carbohydrate Chemistry; Asymmetric Synthesis
Date and Place of Birth: 5 December 1950; Varanasi, Uttar Pradesh
Parents: D G Vankar and Vimla
Spouse and Children: Padma S; one *s* (Siddhartha)
Address: Department of Chemistry, Indian Institute of Technology, Kanpur 208 016, India
Tel. (0512) 259 7169, (0512) 259 7436 (O), (0512) 259 0021 (R)
Mobile: 99350 62562
email: vankar@iitk.ac.in; URL: http://home.iitk.ac.in/~vankar/

Education: Gorakhpur Univ.: BSc 69; BHU, Varanasi: MSc 71; Univ. of Pune: PhD 76.

Career: NCL, Pune: Res. Asst 74–75; Hindustan Lever Res. Centre, Bombay: Res. Asst 75–76; King's College, London: PDF 76–77; Univ. of Southern California USA: PDF 77–79; Rice Univ., USA: PDF 79–80; IIT Kanpur: Lecturer 81–82, Asst Prof. 82–91, Prof. 91–.

Scientific Work: Recent work is in the area of carbohydrate chemistry specially related to the synthesis of enzyme inhibitors. Efficient synthesis of many glycosidase inhibitors have been developed and inhibition studied. These include synthesis of hybrid molecules derived from D galactose and 1-deoxynojirimycin analogues, introduced for the first time as inhibitors of glycosidases. Synthesis of L-(+)-swainsonine; L-(+)-lentiginosine have been reported. Reagents like TrBF for anomeric OMe deprotection; oxalyl chloride-AgNO-CHCN for getting anomeric amides; Me SiONO -Me SiN for 2-deoxy-nitroketones, Zn-clSiMe αglycopeptides synthesis, Me SiONO -CrO , to obtain regioselective reduction of epoxides, NaNO -ceric ammonium nitrate-CHCN for making vicinal nitroamides, NaI-BF .Et O, NaI-N-chlorosuccinimide (a simple source of N-iodosuccinimide) have been developed by the group. Besides this, several chiral and achiral synthons have been developed, which are important and have been used by chemists across the world.

Important Publications: **(1)** Total synthesis of L-(+)-swainsonine and other indolizidine azasugars from D-glucose (2008) *Eur. J. Org. Chem.* 4972. **(2)** New method for chloroamidation of olefins. Application in the synthesis of N-glycopeptides and anticancer agents (2007) *Org. Lett.* **9**, 5171. **(3)** Synthesis of novel hybrids of D-galactose with 1-deoxynojirimycin analogues as glycosidase inhibitors (2005) *Angewandte Chemie Int.* Ed., **44**, 2001. **(4)** Trimethylsilylnitrate-chromium trioxide and trimethylsilylnitrate-DMSO: Novel reagent system for one step conversion of olefins into nitro ketones and cyclic ethers into lactones (1999) *J. Org. Chem.*, **64**, 4509. **(5)** NaI/BF .Et O: A mild reagent for the conversion of benzylic and allylic alcohols into iodides and sulfoxides into sulfides (1985) *Tetrahed. Lett.* **26**, 2717.

Memberships: Royal Soc. Chem. 2007.

Awards & Distinctions: Basudev Banarjee Memorial Medal 89 • CRSI Bronze Medal 2001.

Vanninathan, Muthusamy

Elected: 1997
Position: Prof., TIFR Centre for Applicable Mathematics, Bangalore
Specialization: Partial Differential Equations; Numerical Analysis; Asymptotic Analysis and Homogenization; Control of PDE
Date and Place of Birth: 15 May 1951; Sankarankoil, TN
Parents: K Muthusamy and Seethai Ammal
Spouse and Children: R Indira; two *d*
Address: TIFR–Centre for Applicable Mathematics, Sharada Nagar, Yelahanka New Town, Bangalore 560 065, India
Tel. (080) 6695 3745, (080) 6695 3790 (O), (080) 2360 3230 (R)
email: vanni@math.tifrbng.res.in; URL: http://math.tifrbng.res.in

Education: Univ. of Madurai; TN: BSc 70, MSc 73; Univ. Pierre et Marie Curie, Paris: PhD 79.

Career: TIFR Centre, Bangalore (now TIFR Centre for Applicable Maths) Fellow 79–89; Reader 89–94; Assoc. Prof. 94–99; Prof. 99–.

Scientific Work: Work lies in the study of solutions of PDE of physical and mechanical origin. Interested in problems involving small/large parameters. For instance, this can be a discretization parameter of numerical approximation (or) any other natural length scale associated with the problem. The goal is to analyse the behavior of the model as these parameters tend to their critical values. Such an effort requires stability analysis (in the form of apriori estimates, regularity of solutions) and a passage to the limit. Principal contributions along above lines are in the following areas: approximation of boundary value problems by finite elements, homgenization of periodic structures and eigenvalue problems in perforated domains, vibrations of fluid-solid coupled structures, propagation of waves in periodic media, propagation of nonlinear waves using geometrical optics, exact controllability in thin structures.

Important Publications: **(1)** Homogenization of eigenvalue problems in perforated domains (1981) *Proc. Indian Acad. Sci. Math.* Sci. **90**, 3, 239–271. **(2)** Geometrical optics approximation for general scalar conservation laws (1990) *J. Math. Pure. Appl.* (9) **69**, 4, 449–472. **(3)** Research Monograph (1995) *Fluids and Periodic Structures*, John Wiley-Masson, Paris. **(4)** Homogenization of periodic systems with large potentials (2004) *Arch. Ration. Mech. Anal.* **174**, 2, 179–220. **(5)** Exact controllability in fluid-solid structure: the Helmholtz model (2005) *ESAIM Control Optim. Calc. Var.* **11**, 2, 180–203.

Varadachari, Veeravalli Venkata Ranga*

Elected: 1974
Specialization: Physcial Oceanography ; Meteorology
Date and Place of Birth: 1 July 1925; Gutala, West Godavary, A P
Parents: V Appan Singarachari and Kanakamma
Spouse and Children: Kamala (deceased); Radha; two *s*, four *d*
Last Address: Kala Nivas, 11/A, Sagar Co-operative Housing Society, Dona Paula, Goa 403 004, India
***Deceased:** 4 August 2007

Education: Univ. of Andhra: BSc Hons 48, MSc 49, DSc 59; Florida State Univ., USA: MS 56.

Career: Andhra Univ., Dept of Meteorology & Oceanography: Prof. 49–63; Kerala Univ.: Hon. Prof. in Physical Oceanography 63–69; Physical Oceanography Centre, Intl Indian Ocean Expedition Directorate: Sr Sci., Head 63–65; Physical Oceanographic Dn, Natl Inst. of Oceanography: Head 66–81, NIO: Asst Dir 69–74, Dy Dir 74–81, Dir 81–85, CSIR Emeritus Sci. 86–89.

Scientific Work: Made significant contributions to oceanography in India. Main contributions are in the areas of physical and dynamical aspects of upwelling along the Indian Coast line, ocean currents, water masses, submarine canyons, wave refraction and littoral currents along the Indian coast line, circulation in the seas around India, coastal oceanography and coastal zone management, particularly on problems of beach erosion, mud banks along the Kerala coast, rip currents, harbour sedimentation, bar formation near river mouths, dispersal of effluents in the nearshore environment, and the role of ocean and ocean variables on the Indian Southwest monsoon. Basic research triggered applied research and led to several sponsored projects in coastal oceanography.

Important Publications: **(1)** Some studies on wave refraction in relation to beach erosion along the Kerala coast (1966) *Proc. Indian Acad. Sci.* **A64** 192–202. **(2)** Circulation of the surface waters in the north Indian Ocean (1967) *J. Indian Geophys. Un.* **4** 61–73. **(3)** Sediment movement in relation to wave refraction along the west coast of India (1973) *Indian Geophys. Un. Seminar Proc.* **10** 169–191. **(4)** Stability of the coastline from Manakkodam to Thottappally along the Kerala coast (1977) *Proc. Indian Acad. Sci.* **A85** 191–198. **(5)** Stability and safety of Anjuna beach, Goa (1981) *Mahasagar* **14** 97–103.

Memberships: Fellow: INSA 81; NASI 84 • Founder Fellow: Indian Geophysical Union 62; Assn of Exploration Geophysicists 82.

Varadarajan, Manakkal Ganesa*

Elected: 1974
Specialization: Radiology
Date and Place of Birth: 9 November 1917; Pudukottah, Madras
Parents: M Ganesa Ayyar and Mangalammal
Spouse and Children: Brinda; one s
Last Address: 42, Bheemanna Mudali Garden Street, Madras 600 018, India
***Deceased:** 5 October 2004

Education: Univ. of Madras: MBBS 44 MD 67; Madras Govt: DMR (Diploma in Med. Radiology) 48.

Career: Military General Hospital: Venereologist 44–47; Madras Med. Service, Dept of Radiology, Madras Med. College: Radiologist 47–61, Tutor 61–64, Lecturer 64–67, Prof. 67; Barnard Inst. of Radiology, General Hospital, Madras: Dir, Diagnostic Dept: Chief Radiologist, Prof., Head of Radiology 68–70; Stanley Hospital and Med. College, Madras: Head of the Dept of Radiology, Prof. of Radiology, Chief Radiologist 70–72; UGC, New Delhi: Prof. Emeritus 73–78; Madras Neurological Res. Inst.: Chief Radiologist 81–84.

Scientific Work: Has contributed 150 original papers on radiology, mainly diagnostic radiology. The research work includes myodil ventriculography, soft-tissue placentography in pregnant women, physiological intracranial calcifications in Indian subjects, percutaneous transhepatic cholangiography in cases of jaundice and thyroid lymphography in thyroid gland disorders.

Memberships: Fellow: American College of Chest Physicians 59; Intl College of Surgeons 60; Acad. of Intl Medicine 61; NAMS 71.

Varadarajan, Raghavan

Elected: 2001
Position: Prof., IISc, Bangalore
Specialization: Protein Structure and Folding
Date and Place of Birth: 27 November 1960; Bombay, Maharashtra
Parents: Srinivasan Varadarajan and Lotika
Spouse: Sujata
Address: Molecular Biophysics Unit, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2293 2612 (O), (080) 2360 2332 (R)
email: varadar@mbu.iisc.ernet.in; URL: http://mbu.iisc.ernet.in/~rvgrp

Education: IIT Kanpur: MSc 82; Stanford Univ.: PhD 88.

Career: Yale Univ.: Postdoc Fellow 88–92, Damon Runyon Walter Winchell Postdoc Fellowship 88; IISc: Asst Prof. 92–98, Assoc. Prof. 98–2002, Prof. 2002–

Scientific Work: Work in the laboratory is in the general area of protein structure folding and stability. Uses a variety of experimental techniques to understand the relation between protein sequence and stability. These include basic molecular biology, spectroscopy, X-ray crystallography, calorimetry and the development of simple computational procedures for analyses of protein structure and stability. The experimental systems include: RNase S (a protein: peptide complex), *E. coli* thioredoxin, chaperone SecB, maltose binding protein (MBP), CcdB, Gal4 and gpl20, the envelope protein of the AIDS virus. A major effort is to design stabilized and rigidified mutants of gp120 for use as potential vaccine candidates. Methods have also been developed in the lab for the rational design of temperature sensitive mutants of a globular protein based solely on the amino acid sequence. The methods have been used to successfully design temperature sensitive mutants of the small protein CcdB.

Important Publications: **(1)** Residue depth: a novel parameter for the analysis of protein structure and stability (1999) *Structure* **7**, 723–732. **(2)** A procedure for detection and quantitation of cavity volumes proteins. Application to measure the strength of the hydrophobic driving force in protein folding (2002) *J. Biol. Chem.* **277**, 31345–31353. **(3)** Design of temperature-sensitive mutants solely from amino acid sequence (2004) *Proc. Natl. Acad. Sci.* USA **101**, 7925–7930. **(4)** Mutagenesis-based definitions and probes of residue burial in proteins (2005) *Proc. Natl. Acad. Sci.* USA **102**, 16221–16226. **(5)** Design and isolation of temperature-sensitive mutants of Gal4 in yeast and *Drosophila* (2007) *J. Mol. Biol.* **370**, 939–950.

Memberships: Fellow: INSA 2007.

Awards & Distinctions: B M Birla Award for Biological Sci. 98 • S S Bhatnagar Award 2002 • Swarnajayanthi Fellowship 99 • Welcome Trust Sr Res. Fellowship 2000.

Varadarajan, Srinivasan

Elected: 1972
Specialization: Organic and Biological Chemistry and Technology
Date and Place of Birth: 31 March 1928; Bangalore
Spouse and Children: Latika; two s (Raghavan, Madhavan)
Address: 4-A, Girdhar Apartments, 28, Feroz Shah Road, New Delhi 110 001, India
Tel. (011) 2322 1932-50, (011) 2323 0828 (O), (011) 2371 2512, (011) 2371 3137 (R)
email: esoffice@insa.nic.in

Education: Univ. of Madras: BSc Hons. 48, MA 48; Andhra Univ.: MSc 49; Delhi Univ.: PhD 52; Univ. of Cambridge: PhD 56

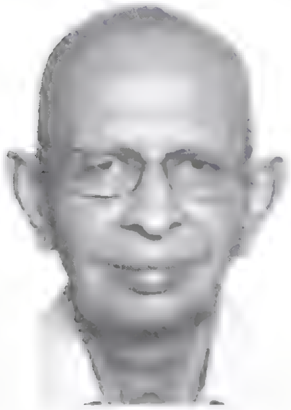
Career: Delhi Univ., Dept of Chem.: Res. Asst 49–51, Lecturer 50–53; Cambridge Univ. Chemical Lab.: Overseas Scholar of the Royal Commission for 1851 Exhibition 53–56; MIT, USA: Vis. Lecturer 56–57; Addenbrooks Hospital, Cambridge: Beit Memorial Fellow 57–59; Pembroke Coll., Cambridge: Member 53–59, Unilever, UK 58–59; Hindustan Lever Ltd, Bombay: Head of Res. 60–74, Dir of Chemicals Manufacture; IPCL, Baroda: Chmn and Managing Dir 74–81; Engineers India Limited, Delhi: Chmn and Managing Dir 75–78, 81–82; Petrofils Co-op Ltd., Baroda: Chmn 75–80; Bridge & Roof Co., Calcutta: Chmn 81–83; Dept of Sci. & Technol., Govt of India, New Delhi: Secretary 82–84; CSIR, New Delhi: Dir-General 84–86; Planning Commission, Govt of India, New Delhi: Chief Consultant 86–88; Indian Vaccines Corporation, New Delhi: Chmn 90–96.

Scientific Work: With T R Seshadri, worked on natural products, on plant products, particularly flavonoids, retenoids and benzopyrones of various types; with Alexander Todd on the structure of ribonucleic acids, phosphate linkages in RNA established through cyclonucleosides confirmed with iodine labelling and X ray crystallography in laboratory of Lawrence Bragg. On the synthesis of deoxy-nucleosides, biosynthesis of DNA with ^{14}C labelled deoxynucleoside triphosphates derived from bacteriophage system; on the difference in nucleic acid metabolism in normal and malignant tissues. Further work was on a variety of problems involving several disciplines in biology, chemistry and chemical engineering. Research interests include chemistry and toxicology of oils and fats, composition of essential oils and perfumery materials, surface activity and detergency, human nutrition, biochemistry and metabolism of skin. Later interest on large-scale petroleum and gas processes for refineries in and outside India; design and production of heavy water for Indian Atomic Nuclear Power Plants;. international cooperation in science; worked on environment around Taj Mahal. Other work at Bhopal following highly toxic gas leakage (Dec. 84) and devising methodology for safe disposal of additional quantities of toxic materials.

Memberships: Fellow: Royal Soc. of Chem.; INSA 83; INAE 87; TWAS 97; NAAS.

Awards & Distinctions: Om Prakash Bhasin Award • Padma Bhushan 85 • Andhra Univ., IIT Madras, Guru Nanak Univ., BHU: DSc (hc) • President: INAE 92–95, INSA 96–98 • Nutrition Soc. of India; Oil Technologists Assn of India • Council Member: IIM, Ahmedabad 74–92; NCAER, New Delhi 76–84 • Member: Oxford Energy Policy Club 76–83 • INSA CV Raman Medal • INAE Lifetime contribution in Engg • Lifetime award in petroleum science. Chairman: NAAC Council.

Vardya, Mahendra Singh



Elected: 1972
Specialization: Astrophysics
Date and Place of Birth: 22 February 1933; Fatehpur, Uttar Pradesh
Parents: Bhanwarlal Khubilal Vardya and Umrao Bai
Spouse and Children: Shobha Rani; one *s*, one *d*
Address: 502, Vigyan Shila, Juhu-Versova Link Road, Seven Bungalows, Mumbai 400 061, India
Tel. (022) 2634 1688, (022) 2634 1313 (R); Mobile: 98702 23376
email: msvardya@gmail.com

Education: BHU Varanasi: BSc 51, MSc 53; Yale Univ., USA: PhD 59.

Career: Univ. of Delhi, Dept of Phys.: Jr Res. Scholar 53–54, Sr Res. Scholar 54–55, Pool Offr 60–62; Univ. of Michigan, USA: Res. Asst 55–57; Yale Univ., USA, Dept of Astronomy: Henry J Smith Fellow 57–58, Res. Assoc. 58–59, Assoc. in Res. 59; Univ. of California, USA, Dept of Astronomy: Jr Res. Astronomer 59–60, Asst Res. Astronomer 62–64; Jt Inst. for Lab. Astrophysics, USA: Annual Vis. Fellow 64–65; Univ. of Utrecht, Netherlands: ZWO Vis. Fellow 65–66; TIFR, Bombay, Theoretical Astrophysics Group: Reader 66–72, Assoc. Prof 72–83, Prof. 83–90, Sr Prof. 90–93; Astronomical Inst., USA, Netherlands: Vis. Prof. 74, 85; Goddard Space Flight Centre, USA: NASA-NRC Sr Resident Assoc. 75–77.

Scientific Work: Was the first to construct hydrogen-helium adiabats with molecular hydrogen, and determine the march of molecular abundances in late-type stars; was the first to propose the idea of pressure dissociation and study its effect. proposed molecules to be the source of missing solar ultraviolet opacity, and elucidated the effect of various parameters in the mixing length formulation of convection on stellar evolutionary models; detected carbon monoxide molecules around hot supergiant and gave an explanation for the appearance of silicate emission feature in Mira variable stars; gave definitive result that rotation enhances mass loss in O and B stars.

Memberships: Member: Astronomical Soc. of India 73–80; Intl Astronomical Union; Indian Phys. Assn. Fellow: Royal Astronomical Soc., London.

Awards & Distinctions: Member: Sigma Xi; Henry J Smith Fellow, Yale University • Visiting Fellow, JILA, Boulder, USA.

Varghese, Thundil George*

Elected: 1974
Specialization: Detection of Underground ; Atmospheric Nuclear Explosions, Instrumentation and Data Processing
Date of Birth: 19 August 1928
Last Address: Bhabha Atomic Research Centre, Trombay, Bombay 400 085, India
***Deceased:** 14 November 1977

Education: MSc.

Career: BARC, Bombay, Seismology Section: Sci. Offr. and Head 77.

Scientific Work: Worked in detection and location of atmospheric nuclear explosions by multiple arrays of sensitive microbarographs and correlation filtering; built a digital real-time processor around an indigenous computer for the rapid location and identification of teleseismic sources of significance to the seismic verification of comprehensive Test Ban Treaty; delineation of seismically active subsurface formations through precisely mapping the foci of microtremors using mobile wireless telemetered seismography arrays and computer-based data analysis; enhanced detection capability with reference to underground nuclear explosions in the core shadow region of NTS by array processing and digital filtering; design and construction of particle accelerators, high-vacuum equipment seismographs and microbarographs.

Varma, Rama Shankar*

Elected: 1947
Specialization: Operational Research; Pure and Applied Mathematics
Date and Place of Birth: 1 February 1905, Nai Bazar, UP
Parents: Banwari Lal and Sundari Devi
Spouse and Children: Champa Devi; four *s*, two *d*
Last Address: Defence Science Laboratory, NPL Buildings, Pusa, New Delhi 110 012, India
***Deceased:** 31 March 1970

Education: Univ. of Allahabad: BSc 25, MSc 27, DSc 38.

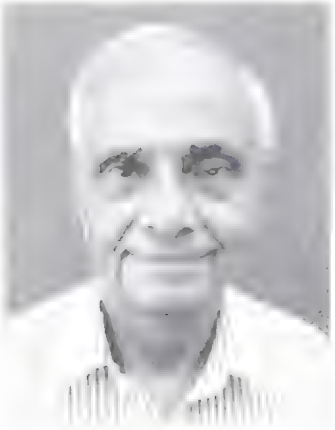
Career: Univ. of Allahabad: 27–30; Christ Church College, Cawnpore: Lecturer 31–38; Univ. of Lucknow: Lecturer 38–46, Reader in Maths 46–49; Defence Sci. Laboratory, Ministry of Defence, New Delhi: Sr Sci. and Prin. Sci. Offr 49–62; Univ. of Delhi: Prof. and Head, Dept of Maths: 62–70.

Scientific Work: Research covered both pure and applied mathematics: functions of real variables, special functions, ordinary differential equations, Fourier analysis, integral transforms and operational calculus, fluid mechanics, aerodynamics, space dynamics, ballistrics, operational research quenching theory, theory of reliability, and information theory. On the basis of Meiyer's integral, developed in 1945 a theory on generalized Laplace transform and gave a new generalization. Also gave five theorems and subsequently presented an inversion formula for his generalized Laplace transform. In 1951, gave another generalization of the Classical Laplace–Stieltjes integral which came to be known as Varma transform. This transform was found capable of yielding very general results. In 1966, made a detailed study of his two generalizations.

Memberships: Fellow: INSA 49. Founder Member: Bharat Ganita Parishad; Australian Math. Operations Res. Soc.of Am.

Awards and Distinctions: President: Indian Math. Soc. 66–68 • Founder President: Soc. for the Promotion of Math. Sci.

Varma, Ram Kumar



Elected: 1977
Specialization: Plasma Physics and Astrophysics; Foundations of Quantum Mechanics; Classical-Quantum Relationship
Date and Place of Birth: 31 March 1935; Sardhana, Meerut, Uttar Pradesh
Parents: Uttam Singh and Sona Devi
Spouse and Children: Sushama; two *s*: (Hemant, Rajat)
Address: 303, Saraswati Nagar, Ahmedabad 380 015, India
Tel. (079) 2631 4459 (O), (079) 2674 9242 (R)
email: ramkvarma@gmail.com

Education: Agra Univ.: BSc 53; Lucknow Univ.: MSc 56; Univ. of California, USA: PhD 65.

Career: TIFR, Bombay: Res. Asst 56–61, Fellow 66–68; Univ. of California, USA: Res. Asst 61–65; NASA-Langley Res. Centre, USA: Resident Res. Assoc. 65–66; PRL, Ahmedabad: Fellow 68–70, Assoc. Prof. 70–75, Prof. 75–81, Sr Prof. 81–85, Dy Dir 86–87, Dir 87–95; Univ. of Texas, USA, Center for Plasma Phys.: Res. Sci. 69–71.

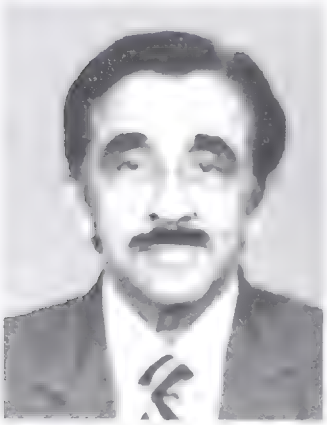
Scientific Work: Most quoted work pertains to plasmas in the mirror machines with the equations as the Varma equations and the mode(branch) predicted by them, subsequently observed, named as the Varma mode/branch. Another equation, Rosenbluth–Varma equation relating to the same problem has also been so quoted. A new coupled mode, the Alfven–Varma mode has been worked out in the literature. Subsequently, work on the tokamak plasma led to the work being referred as the Varma pinch, while another work on dusty plasmas led to Varma kinetic equation being so cited. However, the most significant of work pertains to the system of charged particle dynamics in a magnetic field wherein through both theoretical and experimental works has postulated the existence of a new quantum entity designated as the transition amplitude wave (TAW). This has led to predictions of some very unusual and unexpected phenomena – the observations of one dimensional matter wave interference effects on the macro-scale and even more startlingly, the observation of a curl free vector potential on the macro-scale and in one dimension. Both these predictions having been experimentally substantiated, collide with the current conceptual framework and thereby lead to the emergence of a fundamentally new class of matter wave phenomena on the macroscale, but not negating the existing well-known quantum phenomena–the de Broglie matter wave and the Aharonov–Bohm effect.

Important Publications: **(1)** Flute instability in mirror machines at very low densities (1967) *Nucl. Fusion* **7**, 57. **(2)** Wave mechanical model for the nonadiabatic particles from magnetic mirror traps (1971) *Phys. Rev. Lett.* **26**, 417. **(3)** A quantum-like theory for the nonadiabatic motion of charged particles in inhomogeneous magnetic fields (1985) *Phys. Rev.* **A31**, 3951. **(4)** A probability amplitude description of charged particles in a magnetic field (2001) *Phys. Rev.* **E64**, 036608. **(5)** Classical and macroquantum dynamics of charged particles in a magnetic field (2003) *Phys. Rep.* **378**, 301.

Memberships: Fellow: INSA 85; NASI 88; Astronautical Soc. of India.

Awards & Distinctions: H C Shah Award and Gold Medal 77 • Chmn Plasma Soc. of India 78–82.

Varma, Ravi Martanda



Elected: 1970
Position: Prof. Emeritus, NIMHANS, Bangalore
Specialization: Neurosurgery
Date and Place of Birth: 7 September 1922; Mavelikkara, Kerala
Parents: Ravi Varma
Spouse and Children: Malathi, two s
Address: National Institute of Mental Health & Neurosciences, Hosur Road, Bangalore, India
Tel. (080) 2664 2121/208 (O), (080) 2222 3939 (R)

Education: Madras Univ.: MBBS 47, Univ. of Edinburgh, UK; FRCS Edinburgh 57.

Career: Govt Gen. Hospital, Madras: Res. House Surgeon 47–48, Sr House Surgeon 48–49; Post Graduate Trg in UK Hospitals 49–52; Frenchay Hospital, UK, Dept of Neurosurgery: Sr House Offr 52–54, Registrar in Neurosurgery 56–57, Sr Registrar 57–58; Royal Cornwall Infirmary, UK: Registrar in General Surgery 54–56; All India Inst. of Mental Health, Bangalore, Dept of Neurosurgery: Reader 58–59, Assoc. Prof. and Head 59–66, Prof. and Head 66–74; NIMHANS., Bangalore: Founder Dir 74–77, Prof. Emeritus 79–; Govt of India, New Delhi: Dy Dir General of Health Services 77–78.

Scientific Work: Devised a new topometer-guide scale technique of percutaneous chemothalamotomy for Parkinson's. The technique for the relief of tremor and rigidity of Parkinsonism is simple safe and inexpensive and requires no hospitalization or costly imported machine, avoids open operation and reduces time from 3–4 hours to 45 minutes in X-ray room. Established the Faculty of Mental Health and Neuro Sciences in Bangalore University. Pioneered an integrated approach in service and training in neurosciences and behavioural sciences.

Memberships: Fellow: NAMS.

Awards & Distinctions: Karnataka Rajyosthava Award 69 • Padma Shri 70 • International Award, World Congress of Mental Deficiency, Canada 82 • KSCST M Visweswaraya Award 97 • Mysore Univ.: DSc hc.

Varshney, Umesh

Elected: 2002
Position: Prof., IISc, Bangalore
Specialization: Molecular Biology; Protein Biosynthesis; DNA Repair
Date and Place of Birth: 26 October 1957; Gonda, Uttar Pradesh
Parents: K R Varshney and B D Varshney
Spouse and Children: Archana; one *d* (Ruchi)
Address: Department of Microbiology and Cell Biology, Indian Institute of Science,
Bangalore 560 012, India
Tel. (080) 2360 0169, (080) 2293 2686 (O), (080) 2341 7828 (R)
email: varshney@mcbl.iisc.ernet.in

Education: Jiwaji Univ., Gwalior, : BSc 75; G B Pant Univ. of Agriculture and Technol., Pantnagar: MSc 79; Univ. of Calgary, Canada: PhD 85.

Career: Massachusetts Inst. of Technol., USA: Univ. of Calgary: Sessional instructor 86–87; Res: Postdoc Fellow: 85–88; Postdoc Res. Assoc.; 88–91; IISc, Bangalore: Asst Prof. 91–97, Assoc. Prof 97–2002, Prof. 2002–.

Scientific Work: Unravelled several mechanisms that organisms employ to, maintain fidelity during the various stages ribosomes go through to make proteins; and reutilize ribosomes after they complete one round of protein synthesis. Discovered ingenious approaches that the organelles such as mitochondria use to make proteins with minimal number of accessory factors. Revealed various molecular mechanisms exploited by the DNA repair proteins to maintain the integrity of the genetic blueprint in eubacteria with the aim to develop new drug targets and attenuated strains.

Important Publications: **(1)** Role of 16S ribosomal RNA methylations in translation initiation in *Escherichia coli* (2008) *EMBO J.* **27**, 840–851. **(2)** A single mammalian mitochondrial translation initiation factor functionally replaces two bacterial factors (2008) *Mol. Cell* **29**, 180–190. **(3)** Importance of uracil DNA glycosylase in *Pseudomonas aeruginosa* and *Mycobacterium smegmatis*, G+C-rich bacteria, in mutation prevention, tolerance to acidified nitrite and endurance in mouse macrophages (2003) *J. Biol. Chem.* **278**, 17672–17679. **(4)** The role of leucine 191 of *Escherichia coli* uracil DNA glycosylase in forming a stable complex with a substrate mimic, Ugi, and in uracil excision from synthetic substrates (2001) *J. Biol. Chem.* **276** 17324–17331. **(5)** Specific interactions between ribosome recycling factor and elongation factor G from *Mycobacterium tuberculosis* mediate peptidyl-tRNA release and ribosome recycling in *Escherichia coli* (2001) *EMBO J.* **20**, 2977–2986.

Memberships: Fellow: INSA 2008; NASI 2008 • Life member: Soc. of Biological Chemists; Cell Biology Soc. of India • Member: American Assn for Advancement of Science • Guha Res. Conf. 98; Am. Soc. for Microbiol.

Awards & Distinctions: Alberta Heritage Foundation for Med.: Res. Fellowship 85–88. • DBT National Bioscience Career Development Award 1999. • P S Sarma Memorial Award 2001 • S S Bhatnagar Prize 2001 • Life Sciences Research Award 2002 • J C Bose Fellowship 2008.

Vasudevan, Sukumaran

Elected: 1999
Position: Prof., IISc, Bangalore
Specialization: Physical Chemistry of Materials; Intercalation Chemistry ; Heterogenous Catalysis
Date and Place of Birth: 1 November 1953; New Delhi
Parents: P Narayanan Vasudevan and Amukutty
Spouse and Children: Jayasree; two *d*
Address: Department of Inorganic and Physical Chemistry, Indian Institute of Science,
Bangalore 560 012, India
Tel. (080) 2293 2661 (O), (080) 2360 1484 (R)
email: svipc@ipc.iisc.ernet.in

Education: Delhi Univ.: BSc 73, MSc 75; IIT Kanpur: PhD 80.

Career: Univ. of Cambridge, Res. Assoc. 80–83; IISc: Lecturer 83–87; Asst Prof. 87–93; Assoc. Prof. 93–99, Prof. 99–.

Scientific Work: The development of host-guest chemistry in low-dimensional solids with functionality was the theme. Contributions have shown how the introduction of guest molecules and polymers by intercalation in layered and porous inorganic host lattices is a route to new materials that combine the functionality and properties of the guest and host at the molecular level. Research has shown how a rich diversity of intercalation compounds may be generated and how a combination of physical chemistry techniques can be used to untangle these complex systems.

Awards & Distinctions: IASc Assoc. 87–88.

Vazifdar, S S*

Elected: 1934
Specialization: Medicine
Last Address: Sir J J Hospital, Byculla, Bombay, India
***Deceased**

Education: IMS.

Career: Sir J J Hospital, Bombay: Superintendent.

Important Publications: Discretion and Ethics (1970) *Br. Med. J.*, **4**, 5728,18.2.

Veluthambi, Karuppannan

Elected: 2002
Position: Prof., MKU, Madurai
Specialization: Plant Genetic Engineering; Plant Biotechnology ; Plant Molecular Biology
Date and Place of Birth: 7 March 1953; Thengalpalayam, Tamil Nadu
Parents: Karuppanna Gounder and K Sundari
Spouse and Children: V Balamani; one *d* (Mullai)
Address: Department of Plant Biotechnology, School of Biotechnology, Madurai Kamaraj University,
Madurai 625 021, India
Tel. (0452) 245 8683 (O), (0452) 245 8458 (R), Mobile: 94439 27365
email: kveluthambi@rediffmail.com

Education: Madras Univ.: BSc 73, MSc 75; IISc: PhD 81.

Career: NIH, Bethesda: Vis. Fellow 81–82; Washington State Univ., Pullman: Res. Assoc. 82–85; Purdue Univ., Res. Assoc. 85–88; MKU, Dept of Plant Biotechnology: Reader 88–95, Prof. & Head 95–.

Scientific Work: Established teaching and research programmes in plant genetic engineering at Madurai Kamaraj University. Made the first report on T-DNA transfer beyond the left T-DNA border, resulting in long transfer events. Cloned and sequenced mungbean yellow mosaic virus which causes the yellow mosaic disease in blackgram. Hairpin RNA-mediated RNA silencing was shown to protect blackgram from the yellow mosaic disease. Generated marker-free transgenic rice, which addresses an important biosafety concern of horizontal spread of antibiotic resistance genes to soil bacteria.

Important Publications: **(1)** Transfer of non T-DNA portions of the *Agrobacterium tumefaciens* Ti plasmid pTiA6 from the left terminus of TL-DNA (1995) *Plant Mol. Biol.* **28**, 1149–1154. **(2)** Efficient vir gene induction in *Agrobacterium tumefaciens* requires virA, virG and vir box from the same Ti plasmid (2001) *J. Bacteriol.* **183**, 4079–4089. **(3)** Generation of selection marker-free transgenic plants by cotransformation of a cointegrate vector T-DNA and a binary vector T-DNA in one *Agrobacterium tumefaciens* strain (2002) *Plant Sci.* **163**, 801–806. **(4)** RNAi targeting of DNA virus in plants (2003) *Nat. Biotechnol.* **21**, 131–132. **(5)** Analysis of an isolate of mungbean yellow mosaic virus (MYMV) with a highly variable DNA B component (2004) *Arch. Virol.* **149**, 1643–1652.

Memberships: Member: Guha Res. Conf. • Fellow: INSA 2008.

Awards & Distinctions: Madras Univ. Todla Ekambaram Award 93–94.

Venkataraman, Balu

Elected: 1975
Specialization: Chemical Physics
Date and Place of Birth: 17 December 1929; Madras
Parents: N S Balu and Krishnammal
Spouse and Children: Savitri; one *s*, two *d*, (Arun, Bhawani, Chitra)
Address: A-4/1, Century Enclave, 54(Old), 8(New), Kalakshetra Road, Thiruvanmiyur, Chennai 600 041, India
Tel. (044) 2441 3180 (R), Mobile: 98842 24168
email: savi_bvraman@yahoo.co.in

Education: Univ. of Madras: BSc 49; BHU, Varanasi: MSc 51; Columbia Univ., New York, USA: PhD 55.

Career: Columbia Univ., USA, Dept of Chem.: Teaching, Res. Asst 51–55, Postdoc Res. Fellow & Lecturer 55–56; Aligarh Muslim Univ., Dept of Phys.: CSIR Sr Fellow 56–57; Atomic Energy Establishment, Bombay, Microwave Spectroscopy Sec.: Jr Res. Offr 57–60; Res. Offr 60–63; *Vis.* Assoc. Prof. 65–67; TIFR, Bombay: Reader 63–68, Assoc. Prof. 68–72, Prof. 72–84, Sr Prof. 84–92, Dean of Physics Faculty 79–83; Univ. of Notre Dame, USA, Dept of Chem.: Vis. Prof. 77–79; H C Oersted Inst., Univ. of Copenhagen, Denmark, Chem. Lab. I: Vis. Prof. 88–89;

Scientific Work: Developed instrumentation to measure electronic T1's of free radicals in solutions, for the first time, by the saturation recovery technique, and unravelled the relaxation mechanisms in semiquinones. Measured T1's of H and D atoms in water. Examined T1's of radicals with near orbital degeneracy. Studied Heisenberg and chemical exchange effects on T1's. Developed a magnetic field pulsed electron-electron double resonance technique for understanding cross relaxation effects. Fabricated a time domain ESR spectrometer for flash photolysis studies, and determined the spin dynamics of many photochemical reactions. Demonstrated using ESR, that in the classical BZ chemical oscillator with malonic acid, the extremely small malonyl radical concentration oscillates keeping step with Br and Ce^{4+}. Pico-second time-resolved fluorescence spectroscopy has been employed to study and test models of diffusion controlled reactions and to determine the dynamics of rotational motions of polar dyes.

Important Publications: **(1)** Proton hyperfine interactions in paramagnetic resonance of semiquinones (1955) *J. Amer. Chem. Soc.* **77**, 2707. **(2)** Study of molecular motions by electron spin lattice relaxation measurements Semiquinones in hydrogen bonding solvents (1974) *Pramana* **3**, 95. **(3)** Electron spin lattice relaxation times of transient free radicals (1981) *J. Chem. Phys.* **74**, 3694. **(4)** ESR studies of the oscillations of the malonyl radical in the Belusov–Zhabotinsky reaction in a CSTR (1991) *J. Phys. Chem.* **95**, 5797. **(5)** Rotational reorientation dynamics of polar dye molecular probes by picosecond laser techniques (1990) *J. Chem. Phys.* **93**, 8498. **(6)** Hydrogen abstraction from solvents by the triplet state of p-benzoquinone: A time-resolved electron paramagnetic resonance and laser flash photolysis study (2005) *Rev. Chem. Intermed.* **31**, 167.

Venkataraman, Ganesan

Elected: 1974
Specialization: Condensed Matter Physics; Parallel Computers
Date and Place of Birth: 6 October 1932; Madurai, Tamil Nadu
Parents: V Ganesan and Meenakshi
Spouse and Children: Saraswati; one s
Address: R1, A2 Mandir, Anantapur District, Prashanthi Nilayam 515 134, India
Tel. (08555) 28 7499 (R)
email: gvraman108@gmail.com

Education: Univ. of Bombay: PhD 66.

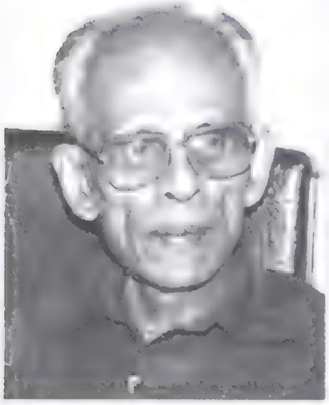
Career: BARC, Bombay, Nuclear Phys. Dn: Sci. Offr.; Indira Gandhi Centre for Atomic Res., Kalpakkam: Dir of Phys., Electronics and Instrumentation Group; ANURAG, DRDO, Hyderabad: Distinguished Sci.; Sathya Sai Inst. of Higher Learning.

Scientific Work: Initial work revolved around the study of the condensed state by neutron scattering. Significant accomplishments include the first-ever measurement of dispersion curves for a polymer and the first quantitative correlation of optical and neutron spectral functions. The application of neutron scattering technique to a study of rotational reorientations of molecules also represents an interesting contribution. Interests then shifted to lattice dynamics. Other highlights include the application of group theory to magnons and a comprehensive review on the dynamics of complex crystals. Organized physics research at Kalpakkam. Later, headed a programme on parallel computers and chip design as needed for DRDO.

Awards & Distinctions: UGC C V Raman Award 79 • Jawaharlal Nehru Fellowship 84–86 • Padma Shri 91 • INSA Indira Gandhi Award for the Popularisation of Science 94 • The Science Congress Centenary Raman Medal 2004.

Memberships: INSA; NASI.

Venkataraman, Gopalasamudram Sitaraman*



Elected: 1974
Specialization: Algology ; Microbiology
Date and Place of Birth: 1 February 1930; Tenkasi, Tamil Nadu
Parents: G R Sitaraman and Lokanayaki
Spouse and Children: Rukmini, two *d* (Sarayu, Sujatha)
Last Address: DBT Project on BGA Biofertilizer, School of Biological Sciences, Madurai Kamaraj University, Madurai 625 021, India
***Deceased:** 3 October 1998

Education: Univ. of Madras: BSc 51; BHU: MSc 53, PhD 60, DSc 71.

Career: IARI, New Delhi: Asst Botanist 56–62, Microbiologist 62–76, Project Coordinator 76–83; Natl Facility for Blue-Green Algae: Project Dir 83–86, Jt Dir of Res. 86–90; Madurai Kamaraj Univ: Dir, DBT Project on Biofertilizer 90.

Scientific Work: In the field of agriculture, was the chief architect of the rural oriented algal biofertilizer technology through which 20–30 kg of biologically fixed nitrogen per hectare can be provided for rice crop. In the area of waste recycling, concept of integrated 'controlled photosynthesis' using algae has potential for reclaimation of domestic and industrial waste waters and also for the production of protein-rich algal biomass for animal feed. In the field of environmental conservation, contribution towards microbial scavenging of heavy metals, pesticides, etc., are equally relevant. Scientific contributions cover a wide range of basic and applied aspects of biological nitrogen fixation by blue-green algae. Demonstrated the transfer of fixed nitrogen from algae to rice plants using ^{15}N. Showed also that strain selection is an important since the strains vary not only in their ability to fix nitrogen but also in their adaptability to conditions obtained in their soil niche, thier resistance to pesticides and their insensitivity to extraneous sources of nitrogen such as NO^{-}_{3} and NH^{+}_{4}.

Important Publications: **(1)** *Vaucheriaceae* (1961) ICAR New Delhi pp 112 **(2)** *Charophyta* (1962) ICAR, New Delhi pp. 130. **(3)** *The cultivation of algae* (1969) ICAR, New Delhi, pp. 319. **(4)** *Algae biofertilizers and rice cultivation* (1972) Today & Tomorrow Pub., New Delhi, pp. 75. **(5)** *Algae: form and function* (1974) Today & Tomorrow Pub., New Delhi, pp. 560. **(6)** Blue green algae production for rice (1981) *FAO Soils Bull.* **46** pp 102, FAO, Rome.

Memberships: Fellow: INSA 81; NASI.

Awards & Distinctions: VASVIK Award 78 • Sanjay Gandhi Award 82 • Australian Bicentennial Medal 88 • Om Prakash Bhasin Award 88 • Padma Shri 92.

Venkataraman, Krishnaswami*

Elected: 1934
Specialization: Organic Chemistry
Date and Place of Birth: 7 June 1901, Madras
Parents: P S Krishnaswami
Spouse and Children: Shakunthala, one *d*
Last Address: National Chemical Laboratory, Poona 411 008, India
***Deceased:** 12 May 1981

Education: Univ. of Madras: MA 23, MSc Tech; Univ. of Manchester, UK: PhD, DSc.

Career: Forman Christian College, Univ. of Panjab, Lahore: Prof. of Organic Chem. 28–34; Univ. of Bombay, Dept. of Chemical Technol.: Reader, Mody Prof., Head 34–57; NCL, Pune: Dir 57–66.

Scientific Work: Major research interests was in chromones, flavonoids, natural colouring matters, synthetic dyes and surface-active agents. Monumental work on synthetic dyes published in eight volumes is one of the greatest contributions to the enrichment of dyestuff chemistry. Established the dyestuff industry in India. Well known for his contributins to technical chemisry particularly synthesis of acacetin groups, work on oxycellulose and hydrocellulose antiseptics and anthelminthics and several other chemical processes and technology. The Baker–Venkataraman transformation is well known in the field of synthetic organic chemistry which was later in detail by T S Wheeler.

Memberships: Fellow: INSA; Inst of Chemists India; Royal Soc. of Chemistry, London; Chemical Soc., London; Indian Chemical Soc. • Foreign Member: USSR Acad. of Sciences.

Venkataraman, Meenakshisundaram*

Elected: 1975
Specialization: Mathematics as Theory of Structures
Date and Place of Birth: 31 December 1923; Thiruvathipuram, N Arcot, Tamil Nadu
Parents: S Minakshisundaram and Janaki
Spouse: Gowri
Last Address: Sri Aurobindo Ashram, Pondicherry 605 002, India
***Deceased:** 18 November 1990

Education: Annamalai Univ.: BA Hons 41, MA 43, PhD 49.

Career: Annamalai Univ.: Lecturer in Mathematics 44–50; Univ. of Madras: Lecturer in Modern Maths 49–56, Reader 56–57, Prof. 58; Madurai Kamaraj Univ.: Prof. and Head of Mathematics 58–78; Univ. of Hyderabad: Prof. and Dean 78–83.

Scientific Work: Started research career with contributions to chain theorems in geometry. Studied chains of the Cox–Grace type, Clifford chains, Langley chains, etc. Later worked on the abstract structures to the theory of functions, spectral theory in Hilberts spaces and to directed sets in topology. Also worked on the structures of the real number system, on the completeness of the Galois theories and on orderable topological spaces.

Memberships: President: Indian Mathematical Soc. 70–71.

Venkataraman, Tiruvadi Sambasiva*

Elected: 1934
Specialization: Sugarcane Research
Date and Place of Birth: 15 June 1884; Salem, Tamil Nadu
Last Address: Lawley Road Post, Coimbatore, India
***Deceased:** 18 January 1963

Education: Univ. of Madras: BA 1905, MA.

Career: Madras Agri. Dept, Coimbatore: Asst 1907; Imperial Sugarcane Breeding Station: 12, Govt Sugarcane Expert 19; Indian Agri. Service: 21–42.

Scientific Work: Credited with contributions to sugarcane research and development in India; evolved the first batch of hybrid sugarcane varieties; pioneer in studying the root system of the sugarcane crop which is of much importance to understand the productivity of the crop, particularly under stress conditions. By simple unorthodox techniques using earthen pots and glass bangles for supporting the sugarcane sett, showed that studies on root system can be conducted in detail and varieties with desirable root system be isolated for use in breeding; found aerial rooting technique for isolation of sugarcane stalks for controlled crossing, free from contamination; one of the first to visualize the need for crossing crops of widely distant genera to rope in the desired characters like disease resistance, hardiness, etc. Made observations on flowering of varieties, fertility of pollen, artificial culture of pollen, viability of hybrid seeds, etc. and recorded and coded them for use in the hybridization programme.

Memberships: Hon. Fellow: South African Sugar Technologists Assn • President: Agri. Sec. of Indian Sci. Congress.

Awards & Distinctions: Rao Sahib 20 • Rao Bahadur 28 • CIE & Knighthood from British Government 42 • Padma Bhushan 56 • Andhra Univ.: DSc hc.

Venkataraman, Taracad Venkitakrishna*

Elected: 1957
Specialization: Agricultural Entomology; Biological and Integrated Crop Pest Control
Date of Birth: 1910
Last Address: T No. 1, First Floor, First Avenue, Besantnagar, Madras 600 090, India
***Deceased:** 30 November 1981

Education: MSc, Assoc. IARI; Univ. of Madras: PhD.

Career: Biological Control, South Pacific Commission and IARI, New Delhi: Entomologist; Faculty of Agri. Univ. of Khartoum, Sudan: Prof. of Entomology 61–70; Sr Colombo Plan Fellow in Australia 51–52; Rockefeller Fellow 64.

Scientific Work: Particularly engaged in the study of insect parasites of important crop pests, with a view to their utilization in the biological control of pests in the field. Has done original work on the fundamentals of insect parasitism and has contributed to our understanding of entomophagous insects in India. Has also undertaken research on the biological control of the Rhinoceros beetle pest of coconut palms in India, Ceylon and South East Asia.

Venkataramana, Tyakal Nanjundiah

Elected: 2002
Position: Prof., TIFR, Mumbai
Specialization: Rigidity and Arithmeticity of Lattices; Cohomology of Arithmetic Groups; Shimura Varieties
Date and Place of Birth: 14 February 1958; Bangalore, Karnataka
Parents: T S Nanjundiah and N Seethalakshmi
Spouse and Children: Geeta Ramana; one *d*
Address: School of Mathematics, Tata Institute of Fundamental Research, Homi Bhabha Road, Mumbai 400 005, India
Tel. (022) 2278 2224 (O), (022) 2280 4831 (R)
email: venky@math.tifr.res.in

Education: Mysore Univ.: BSc 79; Mumbai Univ.: PhD 90.

Career: TIFR: Res. Scholar 79–83, Res. Assoc. 83–89, Fellow 89–93, Reader 93–97, Prof. 2001–.

Scientific Work: Proved the super rigidity and arithmeticity of lattices in groups over local fields of positive characteristic, extending the results of Margulis to the function field case. In collaboration with M S Raghunathan, showed that every compact hyperbolic manifold of dimension n ($n \neq 3,7$) with arithmetic fundamental group has a finite cover whose first Betti number is nonzero. Recently proved that low degree cohomology of Shimura varieties of certain groups restrict injectively to Shimura subvarieties.

Important Publications: **(1)** Zariski dense subgroups of arithmetic groups (1987) *J. Algebra* **108**, 2, 325–339. **(2)** Super-rigidity and arithmeticity of lattices in groups over local fields of arbitrary characteristic (1988) *Invent. Math.* **92**, 2, 255–306. **(3)** Cohomology of compact locally symmetric spaces (2001) *Compositio Math.* **125**, 2, 221–253. **(4)**The first Betti number of arithmetic groups and the congruence subgroup problem (1993) *Contemp. Math.* **153**, 95–107, AMS, Providence, RI. **(5)** Restriction of holomorphic cohomology of a Shimura variety to a smaller Shimura variety (1998) *Duke J. Math.* **95**, 1, 51–106.

Memberships: Fellow: INSA 2004.

Awards & Distinctions: B M Birla Award 97 • S S Bhatnagar Award 2001 • ICTP Award 2000 • INSA Young Scientist Award 90 • J C Bose Fellowship 2008.

Venkataramani, Kaniyur Sundaram

Elected: 1968
Specialization: Horticulture, Botany of Tea Plant; Tea Culture
Date and Place of Birth: 17 January 1924; Madras, Tamil Nadu
Parents: K S Sundaram and C R Lakshmi Ammal
Spouse: S Kanthamani;
Address: Flat B, First Floor, Premier Grihalakshmi Apartments, 4th Seaward Road,
Valmikinagar, Thiruvanmiyur, Chennai 600 041, India
Tel. (044) 2441 5719 (R)

Education: Univ. of Madras: BSc 42, MSc 45, PhD 48.

Career: United Planters Assn of South India, Tea Sci. Dept: Botanist 48–65, Dir of Tea Res. 65–75; School of Agri., Coimbatore: Reader in Horticulture 59.

Scientific Work: Main contribution to tea research is on clonal selection and propagation. Showed that, contrary to general belief, quality tea can be produced only at high elevations, quality in tea is an intrinsic genetic character and can be reproduced at all elevations by using suitable clonal material. This work resulted in the development of improved planting material with far-reaching consequences in case of large-scale replanting and new planting of tea. Also elucidated the problem of defoliation in tea and carried out experimental work on the use of chemical weed killers in relation to tea.

Important Publications: **(1)** Response of tea bushes to foliar application of fertilisers (1959) *J. Indian Bot. Soc.* 38. **(2)** Influence of source of propagation material on rooting of tea cuttings (1962) *J. Indian Bot. Soc.* **41**. **(3)** Yield and quality criteria in tea clonal selection (1972) *Proc. Int. Symp. Plantation Crops.* **(4)** The tea complex (1974) *Proc. Indian Acad. Sci.*, **53**. **(5)** The banana complex (1955) *J. Indian Bot. Soc.*, **34**.

Memberships: Fellow: Indian Acad. of Horticultural Sci.; Indian Botanical Soc.

Awards & Distinctions: For the Sake of Honour Award, Rotary Club of Nilgiris, 76 • Tea Research Award for Life-time Achievement, Tea Board of India, 98.

Venkatarayudu, Tallamraju*

Elected: 1940
Specialization: Crystallographic; Continuous Group
Date of Birth: 10 October 1910
Parents: Jallamraju Raja Rao and Ratna Sakuntala
Spouse and Children: Venkata Subbalakshmi; two *s*, one *d*
Last Address: 8-52-2, China Waltair Colony, Andhra University Post, Waltair 530 003, India
***Deceased:** 29 November 1979

Education: Andhra Univ.: BA 31, MA 33, PhD 40

Career: Andhra Univ., Waltair: Lecturer in Maths 37–39, 44–46, Reader 46–56, Prof. 56–70, and Head of Maths Dept 61–70; Emer. Prof. 70–79; Hindu Collage, Machilipatnam: Lecturer and Head, Dept of Maths 40–44, Emeritus Prof. Univ of Harvard, Michigan/Polytech. Inst, Brocklyn: Vis Prof. 52–54.

Scientific Work: Was the first to apply group-theoretical ideas to the study of normal oscillation in crystals and illustrated his method for diamond crystal. Extended the character method of Bhagavantam and Suryanarayanan for study of physical properties in crystals to isotropic solids and solids of axial symmetry. Developed a new method for the construction of the character table of any space group subject to any boundary condition utilizing the little group techniques. Gave for the first time the physical significance of the magnetic constants occurring against the alternating irreducible representations of the 32 crystallographic point group.

Important Publications: *Theory of groups and its application to physical problems* (1948) Waltair, Andhra Univ. 11 + 234 pp.

Venkatasubramanian, Vettaikkorumakankav Sivaramaier*

Elected: 1978
Specialization: Ultrasonics, Liquid and Solid States; Mass Spectrometry; Nuclear Geology; Isotope Geophysics; Analytical Instrumentation
Date and Place of Birth: 20 June 1930; Palghat, Kerala
Spouse and Children: Shantha, one *d*
Last Address: Department of Physics, Indian Institute of Science, Bangalore 560 012, India
***Deceased:** 22 July 1984

Education: Univ. of Madras: BSc Hons 50, MA 50, MSc 52, PhD 55; IISc: DSc 61

Career: IISc, Bangalore, Dept. of Phys.: Lecturer 59–63, Asst Prof. 63–68, Assoc. Prof. 68–71, Prof. 71–84; McMaster Univ.: Vis. Sci. 60–62.

Scientific Work: One of the few physicists to apply nuclear physics to the elucidation of long-term geological processes. Built the first mass spectrometer in the country for isotropic studies in rocks and minerals. Application of the radioactive decay of rubidium into strontium for the time of formation of mica samples from Kerala, will rank as one of the earliest attempts in the world in developing what has proved to be a very powerful tool for geo- and cosmochronology. Pursued geochronological research using different decay schemes with a crusading spirit and produced the first definitive picture of the temporal evolution of the classic terrain of Karnataka. Built improved mass spectrometers for research in both physics and geology. Breadth of interest ranging from sulphur isotopes in ore minerals to plasma diagnostics and ion implantation was truly amazing.

Awards & Distinctions: Mysore Geologists Assn Gold Medal 81 • Indian Geophysical Union Decennial Award 82.

Venkatesachar, Bachalli*

Elected: 1934
Specialization: Atomic Spectroscopy; Raman Effect ; Hyperfine Structure
Date and Place of Birth: 18 June 1879; Chikkaballapur, Kolar Dist, Karnataka
Parents: Vyasarayachar and Achamma
Spouse and Children: Padmavati Bai; three *s*, one *d*
Last Address: Department of Physics, Central College, Bangalore, India
***Deceased:** 27 May 1972

Education: Univ of Madras: BA, MSc 1900.

Career: Central College, Bangalore, Dept. of Phys.: Lecturer 1903–17, Asst Prof. 17–29, Prof. 29–37; IISc, Bangalore: Acting Dir 38–39; Vijaya College, Bangalore: Founder and Principal 45–51.

Scientific Work: Early work described the influence of the length of radiating column on the width of spectral lines and the density of the vapour in mercury arc and the relative intensities of the radiated spectral lines with special reference to the forbidden line 2270. These show clearly how the Bohr theory could explain satisfactorily the numerous spectral lines obtained under various experimental conditions. Soon after the discovery of the Raman effect, devised a new type of a very effective apparatus to study the effect in a number of substances, examining in particular the wings accompanying the Raman lines. Perhaps the most significant contribution was the study of the structure of spectral lines in relation to the properties of the nucleus. Determined the isotopic constitution and the nuclear spins of the elements platinum, iridium and gold, which had for a long time resisted the attempts of Aston and others to obtain their isotopic constitution by means of the mass spectrograph.

Memberships: Fellow: INSA 35; Inst. of Physics, London 32 • President: Phys. Sec. of Indian Sc. Congress.

Awards & Distinctions: Rao Bahadur 30.

Venkatesan, Kailasam

Elected: 1981
Specialization: Chemical Crystallography
Date and Place of Birth: 29 April 1932; Madras
Parents: K A Kailasam Iyer and V Abhayam
Spouse and Children: Meenakshi, one *d*
Address: Himagiri Apartments, D-1, 77, Fourth Main Road, Malleswaram, Bangalore 560 055, India
Tel. (080) 2334 8736 (R)
email: kvenoc15@yahoo.com

Education: Univ. of Madras: BSc 51; Annamalai Univ.: MA 53, IISc, Bangalore: AIISc 55, PhD 59.

Career: Swiss Federal Inst. of Technol., Switzerland: Postdoc Res. 60–61; Oxford Univ., UK, Chemical Crystallography Lab.: Woolfson Postdoc Res. Fellow 61–63; Univ. of Madras, Dept of Phys.: Reader in X-ray Crystallography 63–71; IISc, Bangalore, Dept of Organic Chem.: Asst Prof. 71–76, Assoc Prof. 71–81, Prof. 81–92, INSA Sr Sci. 92–97.

Scientific Work: Research has been concerned with solid state reactions (photochemical and thermal) and structure-reactivity correlations. Investigated extensively the solid state photochemistry and molecular packings of coumarins, piperitones and styryl coumarins as part of attempts to design organic structures in the solid state which would be photoreactive. Showed that the chloro and fluoro groups are good steering agents in pre-organizing molecules into beta molecular mode if the organic moiety is planar. The importance of molecular topology in the ultimate packing mode was also recognized when the reactants are nonplanar. Evidence, albeit indirect, in support of the reaction cavity concept was obtained from these studies. Internal molecular motion as forerunner of thermal reaction – methyl migration and conformational isomerization in crystals was discovered.

Memberships: Fellow: INSA 89.

Awards & Distinctions: Distinguished Alumni Award IISc 2008.

Venkatesh, Yedatore Venkatakrishnaiya

Elected: 1990
Position: Vis. Res. Prof., Natl Univ. of Singapore
Specialization: Machine and Computer Vision; Neural Networks for Pattern Recognition; Signal Processing and Remote Sensing Data Analysis; System Theory
Date and Place of Birth: 20 May 1942; Mysore
Parents: Y S Venkatakrishnaiya and V Rukminiamma
Spouse and Children: Uma; one *s*, one *d*
Address: Department of ECE, National University of Singapore,
10, Kent Ridge Crescent, Singapore 117 576
Tel. (+65) 6516 1909 (O)
email: yv.venkatesh@gmail.com

Education: Univ. of Mysore: BE 63; IISc, Bangalore: ME 65, PhD 70.

Career: IISc, Bangalore, Dept of Elect. Engg: Lecturer 66–72, Asst Prof. 73–78, Assoc. Prof. 78–83, Prof. 83–2004, Chmn 92–96, Chmn, Dn of Electrical Sci. 98–2001, Dean, Faculty of Engg 2002–04; Univ. of Karlsruhe and Freiburg, West Germany, Alexander von Humboldt Fellow: 74--76, 78, 82, 83, 85, 90; NASA Goddard Space Flight Center, USA: Natl Res. Council Fellow, 85–87; Institut fuer Mathematik, Technische Universitaet Graz, Austria: Vis. Prof. 85; Natural Resources Management System (Remote Sensing), Asian Inst. of Technol., Thailand: Vis. Faculty 90; Australian Natl Univ.: Vis. Fellow 91, 93; Univ. of Kaiserslautern, West Germany: Vis. Prof. 92, 94/95; Univ. of Calgary: Intl Distinguished Res. Fellow 2000; Natl Univ. of Singapore: Vis. Prof. 2001–02, 2004–06; Vis. Res. Prof. 2007, 2008/2009.

Scientific Work: Has derived for classes of linear and nonlinear time-varying feedback systems, the most general L^2- and L^p- ($p \geq 2$) stability and instability conditions, invoking some new differential/integral and norm inequalities. In signal processing (including image-processing), has worked out a novel framework involving generalized Hermite polynomials for reconstruction of signals from partial information, like zero-crossing or phase; and representation of signals at multiple resolutions, using the Hermite-sieve as wavelet-like functions; has extracted contours of multiple objects in images using a novel modification of the self-organizing map (SOM; and has developed a new approach to solve the problem of stereo-correspondence by a further modification of the SOM.

Important Publications: **(1)** On the application of a modified self-organizing neural network to estimate stereo-disparity (2007) *IEEE Trans. Image Process.* **15**, 4, 2822–2839. **(2)** Multiple contour extraction from gray-level images using an artificial neural network (2006) *IEEE Trans. Image Process.* **15**, 4, 892–897. **(3)** Multi-sensor image fusion using influence factor modification and ANOVA methods (2000) *IEEE Trans. Geosci. Remote Sensing* (2000) **38**, 4, 1976–1988. **(4)** Global variation criteria for the L2-stability of nonlinear time varying feedback systems (1978) *SIAM J. Math. Anal. (USA)* **9**, 3, 563–581. **(5)** Global variation criteria for the stability of linear time varying systems (1971) *SIAM J. Control* **9**, 131–140.

Memberships: Member: Intl Assn for Pattern Recognition • Sr Member: IEEE • Fellow: INSA 90; INAE 92.

Awards & Distinctions: Bowen Memorial Prize • IISc Alumni Award for Excellence in Research • Tata-Chem Professorship.

Venkateswara Rao, Gundabathula

Elected: 2003
Position: INAE Distinguished Prof.& Head, Dept. of Mech. Engg, SNIST, Hyderabad
Specialization: Finite Element Methods; Structural Analysis (Linear and Nonlinear) Smart Structures
Date and Place of Birth: 9 November 1944; Kakinada, Andhra Pradesh
Parents: G Satyanarayana and G Mangayamma
Spouse and Children: G Sai Surya Kumari; one *s*, one *d*
Address: No. 502, Reliance Mariam Villa, Street No. 6, Plot No. 70, West Marredpally,
Secunderabad 500 026, India
Tel. 93969 54488 (O), (040) 3291 1785 (R); Mobile: 93913 68231
email: hydrao1944@yahoo.co.in

Education: Andhra Univ.: BE 66; IISc: ME 68, PhD 73.

Career: VSSC/ISRO, Head Finite Element Analysis Sec. 72–78; Head, Advanced S/W Development 78–86; Head, Structural Design & Analysis Dn. 86–95; Group DirStructural Engg Group 95–2002; Group Dir, Structural Anal. & Testing Group 2002–.

Scientific Work: Actively contributed towards the rigorous structural analysis (FEA) and recommendation of necessary design modifications based on the analysis for the projects Aryabhatta, SLV - 3, ASLV, PSLV and GSLV (structural systems and subsystems). Primarily worked in the area of finite element methods applicable to structural analysis problems. Developed a number of new chemical finite elements well as a new class of finite elements based on coupled-displacement fields. As a team leader instrumental for the development of general purpose software for structural analysis; FEAST family of codes (composites, nonlinear and heat transfer) and pre- and post-processor PREWIN, first of their kind developed in India, meant for import substitution. Some of the finite elements developed are: prediction of the nonlinear vibration behaviour of structural elements; prediction of the post-buckling behaviour of structural elements; thermomechanical optimization of structures using optimality criterion, etc. Developed many simple continuum formulations for complex linear and nonlinear structural analysis problems. Developed some new concepts in foundation engineering. Developed new and simple methods for the damage mechanics of composites. Developed Galakin and least square finite element for solving specific highly nonlinear differential equations in fluid mechanics.

Memberships: Member: ISTAM; ISAMPE; ISSS.

Awards & Distinctions: ISRO Distinguished Achievement Award for Chmn 76 • S S Bhatnagar Prize 89 • IISc Distinguished Aero Alumnus Award 92.

Venkateswaran, C S*

Elected: 1944
Specialization: X-ray Spectroscopy
Date of Birth: 1904
Last Address: East Nada, Irinjalakuda Post, Kerala, India
***Deceased:** 1978

Education: DSc.

Career: Univ. of Travancore, Kerala: Prof. of Phys. 52; Univ. College, Trivandrum: Principal 52–56; Dir of Collegiate Edn., Trivandrum: 57–58.

Venkateswaran, R*

Elected: 1935
Last Address: Department of Chemistry, University College, Rangoon, Burma
***Deceased**

Education: MA; Univ. of London, UK: PhD.

Career: Univ. College, Burma, Dept of Chemistry.

Venkateswaran, S*

Elected: 1934
Specialization: Raman Spectroscopy
Date of Birth: 1901
Last Address: Flat No. 11, Tulsi Vihar, 70, Marine Drive, Bombay 400 001, India
***Deceased:** 12 March 1971

Education: DSc, BL.

Career: Patents Office, Calcutta; Trade Marks Registry, Bombay: Dy Registrar of Trade Marks 55, Registrar 55–57; Ministry of Commerce and Industry, Bombay: Offr-on-Special Duty 57–60; Controller-General of Patents, Designs and Trade Marks, Bombay 60.

Scientific Work: Early work was on Raman effect. In subsequent years worked on patent and trade marks and was the architect of trade mark legislation in India.

Venkateswarlu, Jillela*

Elected: 1953
Specialization: Plant Cytogenetics ; Embryology
Date and Place of Birth: 21 March 1912; Komaragiripatnam, East Godavari, A P
Parents: Ramamurty and Lakshmi Devi
Spouse and Children: Manikyamba, three *s*
Last Address: 15-12-10, Kalpana, Krishnanagar, P.O. Maharanipeta, Visakhapatnam 530 002, India
***Deceased:** 20 May 1978

Education: Andhra Univ.: BSc 32, DSc 47; BHU: MSc 34; Univ. of Cambridge: PhD 51.

Career: Andhra Univ., Dept of Botany: Lecturer 37, Reader 46, Prof. and Head 51; College of Sci. and Technology Andhra Univ: Principal 68–71, Chmn Faculty of Sci. 69–72, ICAR Emer. Sci. 72–75, UGC Res. Sci. 75–78; Univ. of Wisconsin: Fulbright Fellow and Vis. Prof. 73–74.

Scientific Work: Was the first to describe the cell lineages in embryogeny. Applied the systems of the famous French botanists, Souges and Crete, and the American botanist Johannsen on the large order Myrtales which resulted in a great deal of significant research in systematic embryology of angiosperms in our country. In cytogenetics, the group was the first to map the pachytene chromosomes of several crop plants like sorghum, pearl millet, Job's tears, solanums, tomatillo, mustards, brassicas and several fodder grasses. This work is of considerable significance both for understanding the genome relationships and for its potentiality in application to crop improvement. Studies on the dynamics of chromosome behaviour in the autotetraploid maize and later extended to other crops were both unique and difficult.

Memberships: Fellow: INSA 61; Indian Botanical Soc. • President: Indian Botanical Soc. 61; Indian Soc. for Genetics and Plant Breeding.

Awards & Distinctions: Birbal Sahni Gold Medal 71 • Bashambarnath Chopra Lecture Award 74.

Venkateswarlu, Kunapuli*

Elected: 1958
Specialization: Raman Spectroscopy; Molecular Dynamics
Date and Place of Birth: 3 June 1916; Nuzvid, Andhra Pradesh
Parents: K Poornaiah Sastry and K Annapurnamma
Last Address: 617-B, BHEL Township, Ramachandrapuram, Hyderabad 500 032, India
***Deceased:** 2 July 2005

Education: Andhra Univ.: BSc Hons 36, MSc 39, DSc 46.

Career: Andhra Univ.: Demonstrator in Phys. 39–41, Lecturer 41–46, Sr Lecturer 46–48; Cambridge Univ., UK and Caltech, USA: Madras Govt Overseas Scholar in Geophys. 48–50; Govt of Madras: Special Offr for Ground-water Resources 51–53; Annamalai Univ., Dept of Phys.: Reader 54–55, Prof. and Head 55–62; Kerala Univ., Dept of Phys.: Prof. and Head 63–69; Technical Univ., Norway: Vis. Prof. 64; P S G College of Arts and Sci.: Res. Prof. of Phys. 71–72, UGC Emeritus Prof. 78–80; Florida Inst. of Technol., USA: Vis. Prof. 81–83.

Scientific Work: Investigated extensively on various interesting problems in Raman effect of temperature on stokes and anti-stokes Raman lines, relative intensities of Raman lines, Rayleigh and Raman scattering in crystals, solvent effect, positional isomerism, effect of substitution, etc. Several important conclusions like variation of intensities of Raman lines with temperature contrary to expectation from Placzek's theory and that the Raleigh scattering in crystals is only 5 to 10 times that of Raman scattering have been observed. The application of various types of force fields has been studied in several polyatomic molecules and the limitations in each case was defined. The potential constants thus obtained were utilized for estimating mean amplitudes of vibration, shrinkage effect, coriolis coupling constant, centrifugal distortion constants, thermodynamic and bond order properties of various molecules have also been evaluated. Investigations of various aspects of molecular vibrations have been extensively studied in several polyatomic molecules. Some investigations in magnetochemistry like diamagnetism and hydrogen bond and on X-ray diffraction studies by hairs and feathers have also been made and important conclusions arrived at.

Memberships: Fellow: Inst. of Physics, London 47.

Venkateswarlu, Putcha*

Elected: 1957
Specialization: Spectroscopy; Magnetic Resonance; Nonlinear Optics
Date and Place of Birth: 25 October 1921; Dantaloor, Guntur, Andhra Pradesh
Parents: Chndramouli Sastri and Bala Tripurasundari
Spouse and Children: Saraswati; four *s*, one *d*
Last Address: Department of Physics, Alabama A & M University, Normal (Huntsville), Alabama 35762, USA
***Deceased:** 8 August 1997

Education: Andhra Univ.: BSc; BHU, Varanasi: MSc 44, DSc 47.

Career: Rask Oster Foundation, Copenhagen: Res. Scholar 47–48; Univ. of Chicago: Postdoc Fellow 48–49; NRC of Canada: Postdod Fellow 49–50; MIT, USA: Res. Assoc. 51–52; Dube Univ.; UK: Res. Assoc 52–54; Aligarh Muslim Univ.: Reader and Prof. 54–61; IIT, Kanpur, Dept of Phys.: Prof. 61–82; NRC of Canada, Dn of Pure Phys.: Vis. Sci. 67–68; Herzberg Inst. of Astrophys.: Vis. Res. Fellow 76–77; Univ. of British Columbia, Canada: Vis. Prof. in Chem. 72–73; Lousiana State Univ., USA, Dept of Chem.: Vis. Prof. 82; Alabama A & M Univ., USA, Dept of Phys.: Prof. 82–97.

Scientific Work: Has obtained extensive results in halogen spectra. Was the first to observe a bent triatomic free radical (CF_2) through its emission spectrum. First to predict dipole moment and microwave transitions in excited states of T^d and $D2^d$ type molecules. Obtained extensive results in EPR, NMR, microwave spectra, laser excited fluorescence, energy transfer and energy unconversion in rare earth ion-doped crystals, nonlinear optics and optical phase conjugation.

Important Publications: **(1)** A sensitive gas-phase photoacoustic spectrometer with provision for simultaneous recording of absorption spectrum (1987) *Rev. Sci. Instrum.* **58** 1871. **(2)** Laser photoacoustic spectroscopy of iodine molecule: Single- and two- photon absorptions (1987) *Pramana–J. Phys.* **29** 261–277. **(3)** Hyperfine Interactions in molecules through laser spectroscopy (1985) *J. Hyperfine Interactions* **24-26** 203 **(4)** Emission bands of halogens: (1947) *Proc. Indian Acad. Sci.* Part 1 **A25** 119-132; Part 3 **A25** 133-137; Part 4 **A25** 138-150; Part 5 **A26** 22-30.

Memberships: Fellow: INSA 70; Am. Phys. Soc.; Opt. Soc. of Am.

Awards & Distinctions: C V Raman Centenary Medal Award 88.

Venkiteshwaran, Sekharipuram Padmanabhier*

Elected: 1939
Specialization: Instrumentation; Radio Meteorology ; Wind Power
Date and Place of Birth: 15 February 1905; Palghat, Kerala
Parents: S K Padmanabha Iyer and Parvathy Ammal
Spouse and Children: Alamelu Chellammal; three s, one d
Last Address: A1/272, Safdarjung Enclave, New Delhi 110 029, India
***Deceased:** 26 September 1985

Education: Univ. of Madras: BSc Hons 26.

Career: Presidency College, Madras: Demonstrator and Univ. Res. Student in Phys. 26–30; IMD, Agra, Delhi, Pune: Asst Meteorologist 30–43, Meteorologist 43–53, Dir of Agri. Meteorology Dn 53–56, Dir of Regional Meteorological Centre, Bombay 56–57, Dir of Instruments Dn, Poona 57–59, Dy Dir General 59–60; NAL, Bangalore: Asst Dir and Head of Wind Power Dn 60–65; CSIR Retired Sci. 65–72.

Scientific Work: Scientific research covered a wide spectrum from agricultural meteorology to cloud physics, from climatology to atmospheric electricity, although the common thread linking different fields of interest was instruments and methods of observation. First work was on the development of Dines meteorographs of Agra and their use in upper air measurements and then came two volumes on the upper air climatology of India and its neighbourhood. Then followed a series of papers on the F-type radio sonde and a variety of meteorological instruments. Pioneered the study of atmospheric electricity in the free atmosphere and developed the potential gradient sonde and the conductivity sondes in the early fifties. Another area in which contribution was made is radar studies of rain and atmospheric turbulence. At NAL, initiated wind energy studies and windmill designs in the country. Finally started work in an entirely new area, the development of psychrosonde, and on the nature of the radio refractive index over India and its neighbourhood and its variations in time and space.

Memberships: Fellow: INSA 70.

Awards & Distinctions: IETE Meghnad Saha Award 71 • IETE S K Mitra Award 72.

Venkoba Rao, Antapur*

Elected: 1984
Specialization: Depressive Disease; Suicidology; Lithiumology; Biological Psychiatry; Geriatric Psychiatry; History of Psychiatry
Date and Place of Birth: 20 August 1927; Kavutalam, Andhra Pradesh
Parents: A Raghavendra Rao and Lakshmi Devi
Spouse and Children: Parvathi Devi; one *s*, one *d* (Ashok, Santhi)
Last Address: Tilak, 506, K K Nagar, Madurai 625 020, India
***Deceased:** 25 October 2005

Education: Univ. of Madras: MBBS 49, MD 58, PhD 68, DSc 78; Mysore Univ.: DPM 61.

Career: Madras Med. College & Madurai Med. College: Asst. Prof. 54–62; Madurai Med. College: Prof. & Head of Inst. of Psychiatry 62–85; Centre for Advanced Res. on Health and Behaviour, ICMR, Madurai: Offr-in-Charge 85–93.

Scientific Work: Research contributions are in epidemiology, clinical profile, the course and outcome and cultural influences and lithium therapy of depression; the nature of suicide behaviour, its causes and especially suicide counters. Pioneered suicide prevention centre, lithium and geropsychiatric clinics in India. Study in biological psychiatry related to melatonin in depressive disease: low level of melatonin in depression and its persistence in remission as a predictor of suicide behaviour as well as relapse. Contributed extensively in the area of transcultural psychiatry and psychiatry of old age. Described psychiatric and organic diseases of the elderly against socio-cultural context (family). Studied the rural aged at the primary health centre level and evolved a model for a total health care for the rural aged. Reported on a cohort of GPI in regard to the clinical features, serology and follow-up. Unique distinction of demonstrating treponema pallida in the frontal lobes of these subjects.

Important Publications: **(1)** General paresis in psychiatry department of a general hospital in India (1972) *Br. J. Psychiat.* **121** 143. **(2)** Lorezepam is anxiety neurosis (1973) *The Antiseptic* **70** 103. **(3)** History of psychiatry in India (1975) *World history of psychiatry* (1975) Brunner Mazel, New York pp 624 **(4)** Suicide in India (1975) in *Suicide in different cultures*, Univ. Press, Baltimore pp 231. **(5)** Stress and psychic illness (1977) *Q. J. Surgical Sci.* **13** 133.

Memberships: Fellow: Royal College of Psychiatrists, England 72; Royal Australian & New Zealand College of Psychiatrists 75; American Psychiatric Assn 75; NAMS 75; INSA • President: Indian Psychiatric Soc. 79; Indian Assn for Social Psychiatry 85; Assn of Gerontology 91–93; Indian Assn of Suicidology 94.

Awards & Distinctions: Sandoz Award 72, 84 • J C Marfatia Award 73, 75, 78 • D L N Murti Rao's Award 80 • Pune Psychiatric Assn Award 81 • ICMR P N Raju Award 81 • MCR B C Roy Award 81 • NAMS Shri Ram Award 84 • ICMR M N Sen Award 84 • M K Sheshadri Award 86 • International Res. Scholar Award 89 • May & Baker Award 90 • N N De Award 92 • R V Rajaram Award 92.

Verma, Ajit Ram*

Elected: 1974
Specialization: Solid State Physics; Optics; Crystallography
Date and Place of Birth: 20 September 1921; Lucknow, Uttar Pradesh
Parents: Hans Raj and Devi Rani
Spouse and Children: Sadhana; two *d*, one *s*, (Poonam, and Suman Atul)
Address: 160, Deepali, Pitampura, Delhi 110 034, India
Tel. (011) 2702 3547 (R)
***Deceased:** 4 March 2009

Education: Univ. of Allahabad: BSc 40, MSc 42; Univ. of London: PhD 52, DSc 69.

Career: Univ. of Delhi: Lecturer 47–50, Reader 55–59; Univ. of London: British Council Scholar 50–52, ICI Res. Fellow 52–55; BHU, Varanasi: Prof. and Head of Phys. Dept 59–65; NPL, New Delhi: Dir 65–82; IIT Delhi: Jawaharlal Nehru Fellow 82–89; NPL, New Delhi: INSA Sr Sci. 87–89; CSIR Emeritus Sci. 90–93.

Scientific Work: Was among the first to give experimental evidence in support of dislocation theory of crystal growth by directly photographing molecular growth spirals on crystal faces. Measured spiral step heights as small as 15Å plus or minus 1Å, still considered the best achievement of multiple beam interferometry. Established active schools on study of polytypism. A variety of polytypes of silicon carbide and other materials were discovered. Established correlation between the spiral step heights and unit cell dimensions. At NPL, promoted instrumentation for precision measurements. Associated with Krishan Lal in development of X-ray topography systems and a triple crystal X-ray diffractometer, used to study diffuse X-ray scattering from nearly perfect crystals. For the first time, showed that diffuse scattering is mainly due to defects and not from phonons. With Krishan Lal and Goswami, succeeded for the first time in observation of a forward diffracted beam in thin and nearly perfect diamond crystals.

Important Publications: **(1)** *Crystal growth and dislocations*, Butterworth publication **(2)** *Polymorphism and polytypism in crystals*, John Wiley. **(3)** *Philos. Mag.* (1951) **42**, 1005. **(4)** *Proc. R. Soc London* (1957) **A240**, 462.

Memberships: Fellow: INSA 63; NASI 63.

Awards & Distinctions: S S Bhatnagar Award 64 • Padma Bhushan 82, Kendriya Sansthan Atma Ram Puraskar 84.

Vidyasagar, Mathukumalli

Elected: 1992
Position: Cecil & Ida Green Prof. Systems Biology Science, Univ. of Texas at Dallas, USA
Specialization: Control System Theory; Computational Biology ; Statistical Learning Theory
Date and Place of Birth: 29 September 1947; Guntur, AP
Parents: Mathukumalli Venkata Subbarao and Kambhammettu Suseelamba
Spouse and Children: Valluri Shakunthala; one *d* (Aparna)
Address: Cecil & Ida Green Professor, Erik Jonsson School of Engineering and Computer Science, The University of Texas at Dallas, 800 West Campbell Road, EC38, Richardson, Texas, 75080–3021, USA
Tel. +1 (972) 883 4679 (O), +1 (972) 489 5705 (M)
email: M.Vidyasagar@utdallas.edu; URL: http://www.utdallas.edu

Education: Univ. of Wisconsin: BSc 65, MSc 67, PhD 69.

Career: Marquette Univ., USA, Electrical Engg Dept: Asst Prof. 69–70; Concordia Univ., Canada: Asst Prof. 70–73, Assoc. Prof. 73–77, Prof. 77–80; Univ. of Waterloo, Canada, Dept of Electrical Engg: Prof. 80–89; CAIR, Bangalore: Dir 89–2000; Tata Consultancy Services, Hyderabad: Executive Vice President 2000–2009; Univ. of Texas at Dallas: Prof. 2009–.

Scientific Work: Main contributions have been in the area of control theory, of both linear as well as nonlinear control systems. In the area of linear control systems, introduced a method known as the `stable factorization approach,' which substantially simplifies the problem of designing controllers for a given system. In the area of nonlinear control systems, proved a theorem known as the `separation theorem,' which permits one to separate the problem of designing a controller for a nonlinear system with incomplete output measurements into two simpler subproblems.

Important Publications: **(1)** *Feedback systems: Input-output properties*, (1975) Academic Press. **(2)** *Control system synthesis: A factorization approach* (1985) MIT Press. **(3)** *Nonlinear systems analysis* (1993) (Second Edition), Prentice-Hall. **(4)** *Learning and generalization: With applications to neural networks and control systems* (2003) Springer-Verlag, London. **(5)** *Robot modelling and control* (2006) John Wiley.

Memberships: Fellow: IEEE; INAE 92; INSA 94; TWAS 96.

Awards & Distinctions: Council of Canada E W R Steacie Memorial Prize 81 • F E Terman Prize 84 • Univ. of Wisconsin Distinguished Service Citation 95 • IEEE H W Bode Lecture Prize 00 • International Federation of Automatic Control Best Theory Paper Award 2001 • IEEE Spectrum 'One of Forty Tech Gurus' 2004 • J Nehru Centenary Lecture Prize 2005 • IEEE Control Systems Science and Engineering Award 2008.

VijayRaghavan, Krishnaswamy

Elected: 1997
Position: Dir, NCBS, Bangalore
Specialization: Developmental Biology; Genetics Neurogenetics
Date and Place of Birth: 3 February 1954; Madras, Tamil Nadu
Parents: V Krishnaswamy and Jaya
Spouse and Children: Usha; one s
Address: National Centre for Biological Sciences, GKVK Campus, Bangalore 560 065, India
Tel. (080) 2363 6460, (080) 2366 6300 (O), (080) 2341 8504 (R)
email: vijay@ncbs.res.in vijay@tifr.res.in, saras@ncbs.res.in

Education: IIT Kanpur: BTech 70–75, MTech 75–77; TIFR: PhD 78–83.

Career: Caltech, USA: Res. Fellow 84–85, SRF 86–88; TIFR: Reader 88–92, Assoc. Prof. 92–96, Prof. 96–; NCBS, Bangalore: Dir 97–.

Scientific Work: Worked on muscle development in the fruit fly *Drosophila melanogaster* and demonstrated multiple forms of the protein myosin and studied the genetics of flight muscle development. Analysed the cell-lineage of specific adult muscles and studied the role of a selector gene, engrailed, in muscles. Experiments on the understanding of hormonal control of gene regulation demonstrated presence of multiple tissue- and stage-specific regulatory elements. Recent work has been on the development of the adult nervous system and muscles and in particular, the role of homeotic genes in muscle patterning.

Memberships: Fellow: INSA 99; NASI 2004.

Vijayamohanan, Kunjukrishna Pillai

Elected: 2008
Position: Sci., NCL, Pune
Specialization: Physical Chemistry; Nanotechnology; Materials Chemistry
Date and Place of Birth: 28 May 1960; Elamadu, Kerala
Parents: P Kunjukrishna Pillai and Vijayalakshmi Amma
Spouse and Children: Manju L; two s (Harikrishnan, Jayakrishnan)
Address: Physical & Materials Chemistry Division,
National Chemical Laboratory, Homi Bhabha Road, Pune 411 008, India
Tel. (020) 2590 2588, (020) 2590 2270 (O), (020) 2587 0307 (R); Mobile: 94213 00306
email: vk.pillai@ncl.res.in; URL: http://www.ncl-india.org/k.vijayamohanan

Education: Kerala Univ.: BSc 80, MSc 82; IISc: PhD 89.

Career: IISc: Res. Assoc. 90–91; NCL: Sci. 91–.

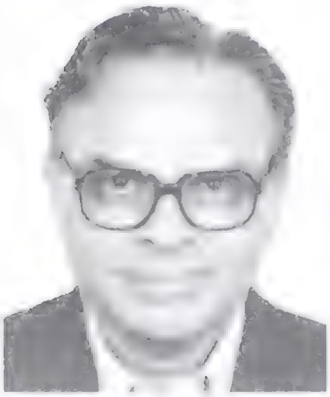
Scientific Work: During the last few years a variety of functional nanomaterials have been developed by the group where size and shape dependant properties have been demonstrated for both metallic and semiconducting hybrid materials like Pt, Ag, Au, Rh, carbon and ZnO. More recent efforts include the effect of variation in both chemical composition and the geometrical structure to control the wetting behaviour of hybrid materials which is of enormous importance for many processes in living organisms and for numerous industrial applications such as design of self cleaning eyeglass, windows and adhesive fixtures. Since carbon nanotubes have a perfect graphitic network of sp carbon, they exhibit intrinsic hydrophobic behaviour, where further functionalization could facilitate easy control of their wetting properties. Although many chemical functionalization treatments have been recently carried out on both single and multiwalled CNTs, no reports are available to date on their wetting properties despite the importance. As a result, a simple strategy of chemical functionalization is employed here for controlling the wettability of multiwalled carbon nanotube films from superhydrophobic (170°) to nearly hydrophillic (30°), which further shows superhydrophilicity with water contact angle 0° within 2 seconds. In addition, the wetting properties of such superhydrophobic nanotube surfaces have been controlled using external electric field. After the application of a potential, charge builds up across the MWNT-water droplet interface. At a critical value of the applied potential, wetting may commence with concomitant evolution of oxygen gas and eventually water spreads over the nanotube film.

Important Publications: **(1)** Synthesis of platinum Y-Junction nanostructures using hierarchically designed alumina templates and their enhanced electrocatalytic activity for fuel-cell applications (2008) *Chem. Mater.* **20**, 601. **(2)** Comparative study of the shape dependant electrocatalytic activity of platinum multipods, discs and hexagons: Applications for fuel cells (2008) *Langmuir* **24**, 3576. **(3)** Tuning of the hydrophobicity of multiwalled carbon nanotube papers (2008) *J. Physical Chem.* **C 112**, 3183–86. **(4)** Enhanced performance of polymer electrolyte fuel cells with nafion based composite electrolytes using sulfonic acid functionalized single wall carbon nanotubes (2008) *Angew Chem.* Int. Ed. **47**, 2653–56. **(5)** Electric field induced switching of superhydrophobic to superhydrophilic surfaces in multiwalled carbon nanotube papers (2008) *Nanoletters*.

Memberships: Fellow Member: Maharashtra Acad. of Sci. 2004.

Awards & Distinctions: MRSI Medal 96 • NCL Res. Foundation Scientist of the Year Award 2003 • CRSI Bronze Medal 2004.

Vijayan, Mamannamana



Elected: 1983
Position: Hon. Prof., IISc, Bangalore
Specialization: X-ray Crystal Structure Analysis; Protein and Crystallography ; Molecular Biophysics
Date and Place of Birth: 16 October 1941; Cherpu, Kerala
Parents: M S Nambudri and Umadevi
Spouse and Children: Kalyani, one *d* (Devayani Dorothy)
Address: Molecular Biophysics Unit, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2360 0765, (080) 2293 2590 (O), (080) 2334 0031 (R)
email: mv@mbu.iisc.ernet.in; URL: http://mbu.iisc.ernet.in/~mv

Education: Univ. of Kerala: BSc 60; Allahabad Univ.: MSc 63; IISc: PhD 67. Oxford Univ., England: Postdoc Res. 68–71.

Career: IISc, Bangalore: Res. Student in Phys. 63–65, CSIR Sr Fellow in Phys. 65–67, IISc Sr Res. Fellow in Phys. 71–74, Asst Prof. in Molecular Biophys. 74–79, Assoc. Prof. 79–84, Prof. 84, Chmn of Molecular Biophysics Unit

85–92, Chmn of Dn of Biological Sci. 93–2000, Assoc. Dir 2000–04, Hon. Prof./Distinguished Biotechnologist 2004–; Oxford Univ., England: Postdoc Res. 71.

Scientific Work: Pioneered the development of biological macromolecular crystallography in the country and contributed substantially to the progress of structural biology in general in India and abroad. Among international leaders in structural studies on lectins which are important in biological recognition processes. Work on lectins led to new information on protein architecture. Also provided valuable insights into the generation of carbohydrate specificity and the biological implications of this specificity. Using an approach involving water-mediated transformations, along with colleagues successfully explored the hydration of proteins and its relation to plasticity and action. Orchestrated a national programme on the structural genomics of microbial pathogens. Personal research in the area has been concerned with mycobacterial, particularly TB, proteins, which has opened up avenues for structure-based inhibitor design. Furthermore, extensively explored supramolecular association of amino acids and peptides, and their implication to chemical evolution and origin of life.

Important Publications: **(1)** Molecular interactions and aggregation involving amino acids and peptides and their role in chemical evolution (1988) *Prog. Biophys. Mol. Biol.* **52**, 71–99. **(2)** Crystal structure of peanut lectin, a protein with an unusual quaternary structure (1994) *Proc. Natl. Acad. Sci., U.S.A.* **91**, 227–231. **(3)** A novel mode of carbohydrate recognition in jacalin, a Moraceae plant lectin with a β-prism fold (1996) *Nature Struct. Biol.* **3**, 596–603. **(4)** Crystal structure of *Mycobacterium tuberculosis* RecA and its complex with ADP-AIF4: implications for decreased ATPase activity and molecular aggregation (2000) *Nucleic Acids Res.* **28**, 4964–4973. **(5)** Structural plasticity and enzyme action: Crystal structures of *Mycobacterium tuberculosis* peptidyl-tRNA hydrolase (2007) *J. Mol. Biol.* **372**, 186–193.

Memberships: Fellow: INSA 87; NASI 90; TWAS 2001 • Chmn: Commission on Biological Macromolecules; Intl Union of Crystallography • Member: IUPAB Council; Inter-Union Bioinformatics Group, SERC; DST; Governing Body of CSIR • President: Asian Crystallographic Assn; INSA.

Awards & Distinctions: S S Bhatnagar Award 85 • G N Ramachandran 60th Birthday Commemoration Medal 94 • IISc Alumni Award for Excellence in Research 96 • FICCI Award in Life Sciences 95–96 • Ranbaxy Research Award in Basic Medical Sciences 96 • J L Nehru Birth Centenary Visiting Fellowship 99 • Om Prakash Bhasin Award 2000 • K S Krishnan Memorial Lecture Award 2001 • Jawaharlal Nehru Birth Centenary Award 2003–04 • Padma Shri 2004 • DBT Distinguished Biotechnologist Award 2004 • First CSIR/Science Congress G N Ramachandran Award for Excellence in Biological Sciences and Technology 2004 • Lifetime Achievement Award, Biotech Res. Soc. of India 2006 • Goyal Prize in Life Sciences 2005.

Vijayaraghavacharya, T*

Elected: 1934, 1943
Specialization: Agriculture
Date and Place of Birth: August 1875
Last Address: Rivertide, Adyar, Madras, India
***Deceased:** 27 February 1953

Career: Madras Provincial Service 1898; Madras Corporation: Revenue Offr 1912–17; Secretary, Board of Revenue 17–18; Dir of Land Records 18; Dy Dir of Industries 18–19; Dewan of Cochin 19–32; Collector and District Magistrate 20; Commissioner for India, British Empire Exhibition 22–25; Member, Legislative Assembly 25–26; Dir of Industries 26; Dir of Fisheries 26; Prime Minister, Mewar State 39.

Scientific Work: Served the Indian government in various fields in agriculture and industries.

Memberships: Member: Public Service Commission 26–29 • Vice-Chmn: Imperial Council of Agri. Res. 29–35 • Chmn: Madras Govt Committee on Cooperation 39.

Awards & Distinctions: KBE • Dewan Bahadur.

Vijayaraghavan, Ramanuja

Elected: 1975
Specialization: Solid State Physics; Magnetic Resonance; Materials Science ; Superconductive Electronics
Date and Place of Birth: 3 January 1931; Ramnad, Tamil Nadu
Parents: R Ramanuja Iyengar and Padmasani
Spouse and Children: Susila; one *s*, one *d* (Ramanujan, Nalini)
Address: Flat 305, Vigyanik Co-operative Housing Society, Plot 58, Sector 14, Vashi,
Navi Mumbai 400 703, India
Tel. (022) 2766 7554 (R)
email: rv@tifr.res.in

Education: Annamalai Univ.: BSc Hons. 51, MA 53; Bombay Univ.: PhD 61.

Career: TIFR, Bombay 51–91: Res. Assoc., Res. Fellow, Fellow, Reader, Assoc. Prof., Prof., Sr Prof., Distinguished Prof. 91, and Dean of Phys. Faculty 87–91.

Scientific Work: Built a sensitive wideline nuclear magnetic resonance (NMR) spectrometer with the associated electromagnet system, which could detect the presence of deuterium and oxygen-17 isotopes in 3 cc of ordinary water. Using this instrument, measured the chemical shifts of O^{17} NMR in several organic compounds and showed that the shift reflected the bond of oxygen with other elements. In the area of metal physics, showed that the bulk susceptibility can be correlated to the spin density at the nucleus in transition metal alloys. Also, it was established that the nature of conduction electron polarization in rare earth intermetallics was oscillatory. With colleagues, established a very strong group in the areas of solid state physics and materials science. Work of this group on valence fluctuating systems, heavy fermions, rare earth magnetism, fine particles and superconductivity is well known.

Memberships: Fellow: INSA 80; NASI 89.

Awards & Distinctions: S S Bhatnagar Award 76 • Hari Om Award 83 • C V Raman Award 83 • Chmn: IPA (Bombay) 75–77.

Vijayaraghavan, Tirukkannapuram*

Elected: 1934
Specialization: Pure Mathematics
Date and Place of Birth: 30 November 1902; Adoor Agaram, S Arcot, Tamil Nadu
Last Address: Krishna Vilas, Vepery, Madras 600 007, India
***Deceased:** 20 April 1955

Education: Univ. of Madras: BSc Hons 24; Univ. of Oxford, UK: DPhil 28.

Career: Univ. of Oxford: Res. Fellow 25–28; Univ. of Dacca, Pakistan: Reader 31–46; Andhra Univ.: Prof. 46–49; Ramanujan Inst. of Mathematics: Dir 49.

Scientific Work: Worked on the set of limit points of the set $\{\phi(n)/n\}$ on Tauberian theorems of the pre-Wienerian variety, and first contribution consisted of a simplified proof of R Schmidt's theorem on Abel means, converse theorems on summability (of series with real terms) when the sums are infinite instead of being finite as usual. Paper on Diophantine approximation arose out of the famous memoir on the subject by Hardy and Littlewood. Showed that the analogue of Borel's theorem, for equations of higher order, was false, and that, even in the case of first order equations, it would be false if the restriction that the solution should be real was not imposed. Next major interest was the study of the fractional parts of powers of real numbers.

Memberships: Fellow: INSA 35 • President: Indian Mathematical Soc.

Vijayraghavan, Usha

Elected: 2007
Position: Prof., IISc, Bangalore
Specialization: Developmental Genetics; Microbial Genetics; Gene Regulation
Date and Place of Birth: 25 August 1961; Kumbakonam, Tamil Nadu
Parents: P Govindarajan and Vimala
Spouse and Children: K Vijayaraghavan; one s (Varun)
Address: Microbiology & Cell Biology Department, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2360 0168 (O), (080) 2341 8504 (R), Mobile: 98443 32445
email: uvr@mcbl.iisc.ernet.in

Education: Univ. of Delhi, BSc 80; PG Inst. of Med. Edu. and Res. (PGIMER) Chandigarh: MSc 83; Caltech, USA: PhD 89.

Career: Caltech: Res. Fellow 89–90; IISc: Lecturer 90–93, Asst Prof. 93–99, Assoc. Prof. 99–2005, Prof. 2006–. Wellcome Trust: Sr Res. Fellow 99–2004.

Scientific Work: Expression of genes is regulated to control an organism's form and function. Using the rice plant as a model my research group investigates how transcription factors, that are master controllers of gene expression, influence when flowering will occur and how different kinds of floral organs are made. Work on RFL, a conserved factor found in all land plants, has shown that in rice it controls the time taken to flower and also the plant's overall architecture. Other work on OsMADS1 and OsMADS2 gives insights on regulation of cell proliferation and differentiation during floral organ formation. Using budding yeast as a single-cell model, the impact of pre-mRNA splicing on global gene expression and cell division was studied. This work sheds new light on the complexity of eukaryotic genome interpretation.

Important Publications: **(1)** Conserved function for the *Arabidopsis SUPERMAN* gene in establishing floral whorl boundaries in rice a monocotyledonous plant (2000) *Curr. Biol.* **10**, 215–218. **(2)** Dependence of pre-mRNA introns on *PRP17*, a non-essential splicing factor: implications for efficient progression through cell cycle transitions (2003) *Nucleic Acids Res.* **31**, 2333–2343. **(3)** Genome-wide analysis of pre-mRNA splicing: intron features govern the requirement for the second-step factor, Prp17, in *Saccharomyces cerevisae and Schizosaccaromyces pombe* (2004) *J. Biol. Chem.* **279**, 52437–42446 (Paper of the week, Editor's choice) **(4)** *OsMADS1*, a rice MADS-box factor, controls differentiation of specific cell types in the lemma and plalea and is an early-acting regulator of inner floral organs (2005) *The Plant J.* **43**, 915–923. **(5)** Distinct regulatory role for *RFL*, the rice *LFY* homolog, in determining flowering time and plant architecture (2008) *Proc. Natl. Acad. Sci.*, USA **105**, 3646–3651.

Memberships: Fellow: INSA 2008; NASI • Member: Guha Res. Conf. 96.

Awards & Distinctions: IASc Assoc. 90–95 • MACS Ekbote Prize 2005 • Govt of Karnataka C V Raman Award for Young Scientists 2003 • DBT National Bioscience Award, DBT 2003 • ISCA Umakant Sinha Memorial Award for Molecular Biology.

Vinayachandran, Puthenveettil NarayanaMenon

Elected: 2009
Position: Assoc. Prof., IISc, Bangalore
Specialization: Physical Oceanography; Ocean Modelling; Physical-biological Interactions in the Ocean
Date and Place of Birth: 19 April 1964; Meladoor, Trissur, Kerala
Parents: Puthenveettil Narayana Menon
Spouse and Children: Sunanda; two *d*, (Anagha, Nidhi)
Address: Centre for Atmospheric and Oceanic Sciences, Indian Institute of Science,
Bangalore 560 012, India
Tel. (080) 2293 3065 (O), (080) 2360 1013 (R), Mobile: 98457 40257
email: vinay@caos.iisc.ernet.in; URL: http://caos.iisc.ernet.in/faculty/vinay.html

Education: Univ. of Calicut: BSc 84; Cochin Univ. Sci. & Tech.; MSc, 87; IISc, Bangalore: MSc (Engg) 92, PhD 96.

Career: NIO, Goa: Res. Fellow 87–90; Univ. of Tokyo, Japan: Postdoc Fellow 96–97; Frontier Res. Centre for Global Change, Tokyo, Japan: Sr Researcher 97–99; IISc, Bangalore: Res. Student 90–96; Asst Prof. 99–2005; Assoc. Prof. 2005–.

Scientific Work: Has made significant contributions to the physical oceanography of the Indian Ocean. First in India to implement and experiment with an ocean general circulation model (OGCM). Using ocean models together with observations, discovered that: there exists a Sri Lanka dome; southwest monsoon current curves around Sri Lanka to intrude into the Bay of Bengal; monsoon circulation in the Bay of Bengal consists of several eddies and gyres; east India coastal current bifurcates east of Sri Lanka; there exists a North Bay monsoon current; there are phytoplankton blooms around Sri Lanka during summer monsoon and in the western Bay of Bengal during winter monsoon; upward transfer of chlorophyll from deep chlorophyll maximum contributes significantly to the surface bloom; orographic effects of the Sahyadris lead to the formation of the Arabian Sea mini warm pool; Wyrtki jets weaken during certain years leading to SST anomalies in the equatorial Indian Ocean.

Important Publications: **(1)** Indian Ocean response to anomalous conditions during (2006, 2007) *Geophys. Res. Lett.* **34**. **(2)** Response of the equatorial Indian Ocean to an unusual wind event during (1994, 1999) *Geophys. Res. Lett.* **26**, 11, 1613–1617. **(3)** A dipole mode in the tropical Indian Ocean (1999) *Nature* **401**, 360–363. **(4)** Observations of barrier layer formation in the Bay of Bengal during summer monsoon (2002) *J. Geophys. Res.* **107**, C12. **(5)** Phytoplankton bloom in the Bay of Bengal during northeast monsoon and its intensification by cyclones (2003) *Geophys. Res. Lett.* **30**, 11.

Awards & Distinctions: S S Bhatnagar Prize 2008 • Frontier Research Award for Excellence in Res. 98.

Vishveshwara, C V

Elected: 1977
Position: Vice-Chmn, Bangalore Assoc. for Sci. Edn; Emeritus Dir, Jawaharlal Nehru Planetarium
Specialization: General Relativity; Relativistic Astrophysics; Cosmology
Date and Place of Birth: 6 March 1938; Bangalore, Karnataka
Parents: C K Venkata Ramayya and K Venkatasubbamma
Spouse and Children: Saraswathi; two *d* (Smitha, Namitha)
Address: Bangalore Association for Science Education, Jawaharlal Nehru Planetarium,
Chowdiah Road, High Grounds, Bangalore 560 001, India
Tel. (080) 2226 6084, 2220 3234 (O), (080) 2341 6467 (R)
email: saruvishu@gmail.com

Education: Mysore Univ.: BSc Hons 58, MSc 59; Columbia Univ., USA: AM 64; Univ. of Maryland, USA: PhD 68.

Career: National College, Bangalore: Lecturer 59–61; Columbia Univ., USA: Teaching Asst 61–63, Pfister Fellow in Mathematical Phys. 64; Univ. of Maryland, USA: Res Asst 64–68; Inst. for Space Studies, USA: NAS-NRC Resident Res. Assoc. 68–69; New York Univ., USA: Assoc. Res. Sci. 69–72; Boston Univ., USA: Sr Sci. 72–74; Univ. of Pittsburgh, USA: Vis. Assoc. Prof. 74–76; RRI, Bangalore: Assoc. Prof. 76–80, Prof. 80–92; Univ. of Pennsylvania, USA: Adjunct Prof. 80–83; IIA, Bangalore: Sr Prof. 92–98, Vis. Sr Prof. 98–2003, Hon. Prof. 2003–05; Univ. of Maryland, USA: Vis. Prof. 85; IUCAA, Pune: Vis. Prof. 90–93; Universidad Del Pais Vasco, Spain: Vis. Prof. 94–2000.

Scientific Work: Worked extensively on the theory of black holes. Credited with one of the earliest geometric characterizations of black holes involving horizons and stationary limits and a fundamental theorem in this area, thereby demonstrating the existence of ergospheres. Gave the definitive proof of stability of the Schwarzschild black holes. Discovered the quasinormal modes of black holes. Investigated various phenomena in the gravitational fields of black holes such as emission of radiation, charged particle motion and effect of electromagnetic fields on accretion disks. Carried out earliest work on the existence and stability of ultracompact objects – compact objects slightly larger than black holes but smaller than the closed light orbit. Other areas of work include exact solutions to Einstein's equations, perturbations of spacetimes, separability of wave equation in curved backgrounds, apparent superluminal velocities of quasars, linearization stability in general relativity, gyroscopic precession, inertial forces in general relativity, black holes in non-flat backgrounds.

Important Publications: (1) Generalization of the "Schwarzschild Surface" to arbitrary static and stationary metrics (1968) *J. Math. Phys.* **9**, 1319. (2) Stability of the Schwarzschild Metric (1970) *Phys. Rev.* **D1**, 2870. (3) Scattering of gravitational radiation by a Schwarzschild black hole (1970) *Nature* **227**, 936. (4) Kerr black hole in the background of the Einstein Universe (2003) *J. Gen. Relativ. Gravit.* **35**, 1977. (5) *Einstein's enigma or black holes in my bubble bath*, (2006) Copernicus, New York.

Memberships: Member: Intl Assoc. for General Relativity and Gravitation; Intl Astronomical Union.

Vishveshwara, Saraswathi

Elected: 2002
Position: Prof., IISc, Bangalore
Specialization: Quantum Chemistry; Computational Biology ; Biomolecular Structure and Interaction
Date and Place of Birth: 30 April 1946; Hassan, Karnataka
Parents: K V Venkatapathaiah and K V Gowramma
Spouse and Children: C V Vishveshwara; two *d* (Smitha, Namitha)
Address: Professor, Molecular Biophysics Unit, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2293 2611 (O), (080) 2341 6467 (R)
email: sv@mbu.iisc.ernet.in

Education: Bangalore Univ.: BSc 66, MSc 68; City Univ. of New York: PhD 74.

Career: Carnegie Mellon Univ., USA: Res. Assoc. 74–76; IISc: Res. Assoc. 77–81, Lecturer 81–86, Asst Prof. 86–92, Assoc. Prof. 92–98, Prof. 98–.

Scientific Work: Major contributions have been made in a variety of important areas in the field of computational biology at the structural level using diverse techniques. The extensive in-depth studies that have been carried out include quantum chemical approaches in investigating hydrogen bonds and proton-transfer reactions, anomeric effect, role of proline in the context of membrane proteins, drug design through computer modelling of protein-ligand interaction. The problem of protein folding has been explored through the methods of statistical thermodynamics, data analysis and information theroy. Graph theoretic methods have been developed to identify non-covalently interacting amino acids which can be clustered in proteins structures and that are important from the point of view of protein structure, folding and function.

Important Publications: **(1)** The geometry of proline containing alpha-Helices (1992) *Intl J. Proteins Peptide Res.* **39**, 356–363. **(2)** Identification of side-chain clusters in protein structures by a graph spectral method (1999) *J. Mol Biol.* **292**, 441–484. **(3)** A network representation of protein structures: Implications to protein stability (2005) *Biophys. J.* **89**, 6, 4159–4170. **(4)** Variations in clique and community patterns in protein structures during allosteric communication: Investigation of dynamically equilibrated structures of methionyl tRNA synthetase complexes (2008) *Biochemistry* **47**, 44, 11398–11407 **(5)** Functional correlation of bacterial LuxS with their quaternary associations: Interface analysis of the structure network (2009) *BMC Struct. Biol.* **9**, 8.

Memberships: Fellow: NASI 2010.

Awards & Distinctions: Rustom Choksi Award 2008.

Visvesvaraya, Mokshagundam*

Elected: 1934
Specialization: Engineering
Date and Place of Birth: 15 September 1861; Muddenahalli, Kolar Dist., Karnataka
Parents: Srinivasa Sastry and Venkachamma
Last Address: 5, Cubbon Road, Bangalore 560 001, India
***Deceased:** 14 April 1962

Education: Central College, Bangalore: BA 1880; Poona College of Science: BE 1883.

Career: PWD, Govt of Bombay: Asst Engineer 1884–1908; Mysore Govt, Mysore: Chief Engineer 1909–12, Dewan 12–18.

Scientific Work: A great engineer, industrialist and statesman. As an irrigation engineer, was responsible for the design and construction of dams and reservoirs throughout India. Was responsible for the starting of the Mysore University, the Bhadravathi Iron and Steel Works and Krishnarajasagar Dam. Started the Visvesvaraya College of Engineering, Agricultural School at Hebbal, Sri Chamarajendra Technical School, Mysore. As an Engineering Consultant and Adviser served in a number of Indian States, including Baroda, Gwalior, Indore, Bhopal and Kolhapur. Besides scientific and technical contributions, was responsible for the starting of the Bangalore Printing Press, Mysore Bank, Karnataka Chamber of Commerce, Govt Soap Factory and the Sandal Oil Factory.

Memberships: Member: Inst. of Civil Engineers, London • Companion of Indian Empire 1911 • Knight Commander (KCIE) 15.

Awards & Distinctions: Bharat Ratna 55 • Durga Prasad Khaitan Memorial Gold Medal 58 • Diploma of Hon. Membership of the Inst. of Consulting Engineers 59.

Viswa Nath, Bhagavatula*

Elected: 1934
Specialization: Agricultural Research
Date and Place of Birth: 1 January 1889; Vizianagaram, Visahakpatnam Dist., Andhra Pradesh
Parents: Joga Rao and Sitamma
Spouse and Children: Sita and Venkata Lakshmi; six *s*, three *d*
Last Address: Krishna Nivas, 8A/85, Western Extension Area, Pusa Road, Karol Bagh,
New Delhi 110 005, India
***Deceased:** 1 February 1964

Education: Royal Inst. of Chem., UK: FRIC 24.

Career: Agriculture Res. Inst., Coimbatore: Asst Chemist 12–23, Agri. Chemist, Chief of Soils and Chem. 23–34; Imperial Agri. Res. Inst. 34–44; Agri. Chemist and Chief of Soils and Agri. Chem. 34–35; Jt Dir. 35; Dir 35–44; Dir of Agri., Madras 44–47; Inst. of Agri. Res., BHU, Varanasi: Prof. in Agri. Sci 47–48; Intl Rice Study Group of FAO, China: FAO/ECAFE Expert 48; Dir of Agri. and Food Commissioner, Rajasthan 49; Ministry of Food and Agri.: Secretary, Hon. Regional Agri. Production Commissioner 50–51; Planning Commission, New Delhi: Hon. Adviser on Agri. 51–52; ICAR Soil Sc. Committee: President 52–56.

Scientific Work: Studies covered a wide range of subjects like soil science, fertilizers, plant and animal nutrition, sugarcane research, economic utilization of agricultural products and wastes. Collaborated with other soil scientists in preparing the first soil map of India. Transferred the agricultural waste for industrial utilization; demonstrated on pilot plant scale that malt could be produced from millet Cholam; active carbon from paddy husk, for decolouring cane juice and for purifying vegetable oils and drinking water; and synthetic rubber from indigenous raw materials. These findings raised the money value of the crops. Work on Cholam resulted in a very useful commercial application/preparation of starch for sizing. Developed and designed an apparatus for extracting small quantities of juice from live sugarcane. The evolution of the top/bottom ratio method of determining the maturity of sugarcanes was the result of extensive research.

Memberships: Fellow: INSA 35; National Institute of Sciences; Indian Chem. Soc.; Indian Soc. of Soil Science • President: ICAR Soil Sc. Committee.

Awards & Distinctions: CIE King's Silver Jubilee Medal 43 • Rao Bahadur 28 • Andra Univ.: DSc hc 42.

Viswamitra, Mysore Ananthamurthy*

Elected: 1979
Specialization: X-ray Crystallography; Molecular Biophysics
Date and Place of Birth: 14 November 1932, Shimoga, Karnataka
Parents: T S Anantha Murthy and A Kopilamma
Spouse and Children: Meera; one s (Sanjana)
Last Address: Department of Physics, Indian Institute of Science, Bangalore 560 012, India
***Deceased:** 10 April 2001

Education: Univ. of Mysore: BA 53; BHU, Varanasi: MSc 55; IISc, Bangalore: PhD 60.

Career: IISc, Bangalore, Phys. Dept: Res Fellow 55–61; Postdoc Fellow 61-63; Lecturer 63–69, Asst Prof. 69–72, Assoc. Prof. 72–75, Prof. 75–95, Hon. Prof. 95–2000; Chemical Lab., UK: Postdoc Fellow 65–68, Vis. Prof. 76; Univ. of Oxford, UK 69, Alberta Univ., Canada 70, Rosewell Park Memorial Inst., USA 71: Vis. Sci.

Scientific Work: Undertook a detailed X-ray study on ionic solids with the help of techniques developed for single crystal analysis. This shows that the thermal amplitudes of atoms in NaCl and KCl reach a critical fraction of 1/5 to 1/6 of interatomic distances at fusion. X-ray study of dAMP-5" deoxyadenylic acid, dCMP-5" deoxycytidylic acid, dGMP-5" deoxyguanydillic acid and dUMP-5" deoxyuridylic acid. Totally new conformational features, not observed before and relevant to the structure and flexibility of the backbone of DNA have been obtained. Conformation of ADP, UDP, CDP and CDP choline has been obtained by single crystal X-ray analyses.

Important Publication: **(1)** A simple device for growing crystals at low temperatures in X-ray cameras (1960) *Rev. Sci. Instrum.* **31**, 456–457. **(2)** Crystal structure of magnesium potassium sulphate hexahydrate (1965) *Z. fur. Krish.* **122**, 161–174. **(3)** The crystal and moleculor structure of lead hexaantipyrine perchlorate (1966) *Acta Crystallogr.* **21**, 522–532 **(4)** Crystal structure of ferroelectric glycine silver niltrate (1970) *J. Phys. Soc.* **28**, 289–300. **(5)** High temperature X-ray crystallography: Devices for single crystal analysis (1975) *J. Indian Inst. Sci.* **57**, 1–19.

Memberships: Fellow: INSA 83.

Awards and Distinctions: Acoustical Soc. of India C V Raman Award 82 • UGC J C Bose Award 84 • TWAS Biol. Prize 86 • INSA J C Bose Medal 86 • Rameshwardas Birla Natl Awad for Med. Sci. 88 • Jawaharlal Nehru Foundation Fellow 87, • FICCI Award 91 • INSA S S Bhatnagar Medal 93 • Natl Citizen's Award 88 • IISc Disting. Alumni Award 99.

Viswanadham, Nukala

Elected: 1987
Position: Prof., Exec. Dir, Indian School of Business, Hyderabad
Specialization: Global Logistics, Service Networks and Supply Chain Networks
Date and Place of Birth: 9 November 1943; Ananthavaram, Andhra Pradesh
Parents: Venkata Rao Nukala and Ranganayaki
Spouse and Children: Subhadra; two s, one d
Address: Centre for GLAMS, Indian School of Business, Gachibowli,
Hyderabad 500 032, India
Tel. (040) 2318 7104 (O), (040) 2318 7213 (R), Mobile: 98669 95066
email: n.viswanadham@gmail.com; URL: http://www.isb.edu/glams

Education: Andhra Univ.: BSc 61; IISc, Bangalore: BE 64, ME 66, PhD 70.

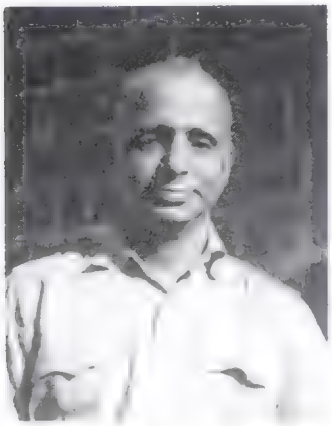
Career: IISc, Bangalore: Lecturer 67–73, Asst. Prof. 73–80, Assoc. Prof. 80–83, Prof. 83–99; Natl Univ of Singapore; Dept of Mech. and Prodn. Engg: Prof. 99–2005; The Logistics Inst. Asia Pacific: Dy Exec. Dir 2001–05; Indian School of Business, Hyderabad: Prof. and Exec Dir 2005–; Univ. of New Brunswick, Canada: Vis. Prof 74–75; Gen. Electric R&D, USA: Vis. Sci. 85; Univ. of Waterloo, Canada: Vis. Asst Prof. 80–81, Vis. Assoc. Prof. 82–83.

Scientific Work: An expert in the area of modelling, analysis and control of dynamical systems including continuous processes and discrete manufacture plants has made significant and lasting contributions to fault detection and diagnosis, reliable control, computer control of flexible manufacturing systems and modelling and performance evaluation of manufacturing systems.

Important Publications: **(1)** *Reliability in computer and control systems* (1987) North Holland. **(2)** *Performance madelling of automated manufacturing systems* (1992) Preutice Hall Inc. USA.

Memberships: Fellow: INSA 88; INAE 88; TWAS 95.

Viswanathan, Dharmavadani Krishnaiyar*



Elected: 1951
Specialization: Public Health, with particular attention to Malaria & Sanitation and Indian Philosophy
Date and Place of Birth: 1 March 1901; Pattamadai, Tirunelveli Dist., Madras
Parents: D S Krishnaiyar and Janaki Ammal
Spouse and Children: Lakshmi; one *s*, one *d*
Last Address: 22 Second Main Road, CIT Colony, Madras 600 004, India
***Deceased:** 27 March 1960

Education: Univ. of Madras: LM&S 23, Dip. in Public Health 28; Univ. of Singapore, Singapore: BSSc 35; Johns Hopkins Univ., USA: MPH 37.

Career: Corporation of Madras: Asst Medical Offr 27–32, Health Offr. 33–35; Govt. of Madras, Dept of Health Health Offr 36–37; Assam Med. Res. Soc.: Res. Offr. 37–39; Indian Army, Burma Front: Major 40–42;

Govt. of Bombay, Dept of Health: Asst Dir, Dir 42–55; WHO, South East Asia Region: Sr Adviser-Malaria 55–60.

Scientific Work: Discovered two new protozoa and named them after Minister of Health *Trypanasoma gilderii*; the lowest paid insect-collector *Nosema bhatti*. Was the first ever to launch a state-wide programme of malaria control with DDT, the wonder drug of the time. Had the unique distinction of being commended by both the Viceroy of India and Mahatma Gandhi on the programme. Was instrumental in helping in the initiation of malaria control in Nepal, Sri Lanka, Burma, Indonesia.

Important Publications: **(1)** *The conquest of malaria in india* (1958) Company Law inst. Press **(2)** *Malaria and its control in Bombay State* (1960).

Viswanathan, Kalakad Sundaram*

Elected: 1956
Specialization: Solid State Physics, Plasma and Space Physics
Date and Place of Birth: 9 June 1929; Kalakad, Tamil Nadu
Parents: K K Sundaram and Bhagirathi
Spouse and Children: Ponnammal; one *s*, one *d*
Last Address: Flat A, First Floor, 68 (old no. 61), II Main Road, Gandhinagar, Adyar, Chennai 600 020, India
email: visponn@yahoo.co.in
Deceased: 5 July 2009

Education: Univ. of Madras: BA 48, MA 50, PhD 55.

Career: RRI, Bangalore: Res. Fellow 50–55, Asst Prof. of Phys. 55–60; NAL, Bangalore: Sci. 60–70; Dublin Inst. for Advanced Studies, Ireland: Postdoc Fellow 65–66; Plasma Phys. Lab., Princeton Univ., USA: Vis. Assoc. 66–67; Kerala Univ., Trivandrum, Dept. of Phys: Prof. and Head 70–89; SPL, VSSC, Trivandrum: Vis. Sci. 89–90.

Scientific Work: Studied the effect anharmonicity of vibration in the level shift and lifetime of phonons, and on neutron scattering in crystals. Derived the basic equations for helicon-phonon interaction in metals for parallel as well as for oblique propagation. Studied giant quantum oscillations in the components of the conductivity tensor for a metal as well as for the damping of the helicon mode. Derived a formula for evaluating the phonon focussing in crystals. Investigated the elastic and gyrotropic anomalies, and acoustic activity during a phase transition for crystals. Studied the motion of charged particles in the geomagnetic field. Investigated pitch angle diffusion, temperature anisotropy instabilities and near perpendicular propagation of electromagnetic waves in the magnetosphere.

Important Publications: **(1)** The characteristic vibrations of rectangular lattice (1952) *Proc. Indian Acad. Sci.* **A36,** 306–314. **(2)** The theory of elasticity and of wave-propagation in crystals from the atomistic standpoint (1954) *Proc. Indian Acad. Sci.* **A39,** 196–214. **(3)** Neutron scattering by anharmonic crystals and the effect of sub-lattice displacements (1979) Pramana –*J. Phys.* **12,** 679–697. **(4)** *The many electron problem,* Asia Publishers.

Visweswariah, Sandhya Srikant

Elected: 2006
Position: Prof., IISc, Bangalore
Specialization: Biochemistry, Protein Structure & Function and Signal Transduction
Date and Place of Birth: 6 March 1957; Bangalore, Karnataka
Parents: Ramachandra Sharma and Padma R Sharma
Spouse and Children: Srikant Visweswariah; one *d* (Sanjana)
Address: Professor, Department of Molecular Reproduction & Developmental,
Genetics, Indian Institute of Science, Bangalore 560 012, India
Tel. (080) 2293 2542 (O), (080) 2663 4261 (R), Mobile: 99028 18616
email: sandhya@mrdg.iisc.ernet.in

Education: Osmania Univ.: BSc 77; IIT Kanpur: MSc 80; IISc: PhD 87.

Career: Astra Res. Centre, Bangalore: Postdoc Fellow 87–83, Sci. 88–93; IISc: Asst. Prof. 93–99, Assoc. Prof. 99–2005, Prof. 2005–date.

Scientific Work: Significant contributions have been made in understanding the molecular mechanisms of regulation and action of receptor guanylyl cyclases and cGMP mediated signal transduction. In addition, important studies relate to the presence and characterization of adenylyl cyclases in mycobacteria and the role of cAMP in the biology and pathogenesis of mycobacteria.

Important Publications: **(1)** Cross talk between receptor guanylyl cyclase C and C-Src tyrosine kinase regulates colon cancer cell cytostasis (2009) *Mol. Cell. Biol.* **29**, 5277–5289. **(2)** New messages from old messengers: cAMP and *Mycobacteria* (2006) *Trends Microbiol.* **14**, 543–550. **(3)** Cyclic AMP in mycobacteria: Characterization and functional role of the Rv1647 ortholog in *Mycobacterium smegmatis* (2008) *J Bacteriol.* **190**, 3824–3834. **(4)** The GAF domain of the cGMP-binding, cGMP-specific phosphodiesterase (PDE5) is a sensor and a sink for cGMP (2008) *Biochemistry.* **47**, 3534–3543. **(5)** Characterization of an evolutionarily conserved metallophosphoesterase that is expressed in the foetal brain and associated with the WAGR syndrome (2009) *J. Biol. Chem.* **284**, 5211–5228.

Memberships: Life member, Soc. of Biological Chemists, India; Indian Soc. of Cell Biology. Soc. of Research in Reproduction, India. Member, Guha Research Council, International Alliance for Cell Signalling; TB Structural Genomics Programme; American Soc. of Microbiologists.

Awards & Distinctions: IASc Assoc. 88–92 • INSA Medal for Young Scientists 88 • CDRI Award for Excellence in Drug Research 2005.

Vrati, Sudhanshu

Elected: 2004
Position: Principal Res. Sci., NII, New Delhi
Specialization: Molecular Virology, Vaccinology and Biotechnology
Date and Place of Birth: 19 March 1960; Anoopshahar, Uttar Pradesh
Parents: O P Arya and Shrimati Devi
Spouse and Children: Abha Gupta; one s, one d
Address: Virology Laboratory, National Institute of Immunology,
Aruna Asaf Ali Marg, JNU Complex, New Delhi 110 067, India
Tel. (011) 2670 3696 (O), (011) 2670 3677 (R), Mobile: 98110 07944
email: vrati@nii.res.in

Education: Meerut Univ.: BSc 78; G B Pant Univ. of Agri. & Tech, Pantnagar: MSc 81; IIT Delhi: DIIT 82; Australian Natl Univ.: PhD 86.

Career: G B Pant Univ. of Agri. & Tech.: Part Time Grad., Res. Asst 79–81, Asst Prof. 87; Australian Natl Univ.: Part Time Tutor/Demonstrator 83–86, Res. Asst 86; G B Pant Univ. of Agri. & Tech.: Asst Prof. 87; Natl Inst. of Immunology: Staff Sci. 87; CSIRO Dn of Biomolecular Engg, Sydney, Res. Sci. 90–93.

Scientific Work: Studied the molecular determinants of Ross River virus virulence; First to define the location of the neutralizing antigen for this virus. Worked briefly on hepatitis viruses and studied transmission of a non-A, non-B kind of hepatitis virus. Worked on ovine adenovirus, established the complete genome sequence of this virus and developed vectors useful for recombinant vaccine development and gene therapy. Since 1993, leading a research group at NII, New Delhi Working on Japanese encephalitis virus (JEV) biology. First to establish the complete for the production of virus-inactivated vaccine. Developed technology for large scale JEV culture in Vero cells for the production of virus-inactivated vaccine. Developed candidate JEV vaccines based on plasmid DNA and recombinant adenovirus. Also studying JEV replication and identified cellular proteins interacting with JEV genome segments important for virus replication.

Memberships: Guha Res. Conf. • Fellow: NASI 2004.

Awards & Distinctions: NASI-Reliance Industries Platinum Jubilee Award 2005 • Alembic Award, Assn. of Microbiologists of India 2005 • K P Bhargava Memorial Medal, INSA, 2004 • National Bioscience Award 2003 • J B Srivastava Oration Award, ICMR 2001 • VASVIK Industrial Research Award 82–86.

Wadhwa, Shashi

Elected: 1995
Position: Prof., AIIMS, New Delhi
Specialization: Human Anatomy; Neuroanatomy; Developmental Neurobiology
Date and Place of Birth: 30 July 1948; Delhi
Parents: Chamanlal Seth and Vidyawati
Spouse and Children: S N Wadhwa; one *s*, one *d* (Pankaj, Parul)
Address: Department of Anatomy, All India Institute of Medical Sciences, Ansari Nagar,
New Delhi 110 029, India
Tel. (011) 2659 4875 (O), (011) 2658 8687 (R), Mobile: 99107 69909
email: shashiwadhwa@hotmail.com, shashiwadhwa@rediffmail.com

Education: Jabalpur Univ.: MBBS 70; AIIMS: MS 74; PhD 87.

Career: Jabalpur Medical College: Sr House Offr 71; AIIMS: Res. House Offr 71–72, Tutor 73–79, Lecturer 79–84, Asst Prof. 84–85, Assoc. Prof. 85–88, Addl Prof. 88–93, Prof. 93–.

Scientific Work: Major research interests are developmental neurobiology, quantitative morphology and electron microscopy. Laboratory has focussed on studying the developing human brain. The human spinal cord, visual pathway, auditory pathway cerebellar nuclei and the autonomic innervation of human urinary bladder have been studied to highlight the critical time periods during which these regions are susceptible to alterations in the microenvironment of the fetus that could result in related developmental abnormalities of varying degrees. Studies have provided baseline data for comparison with pathological material and animal experiments as well as helped in better understanding of processes involved in the development of these regions at the molecular level. Currently, investigating the effects of experience-driven neural activity (patterned sound enrichment and chronic noise exposure) on developing chick auditory nuclei, higher auditory association area – mediorostral neostriatum hyperstriatum ventrale and the hippocampus. Stereological methods for quantitation, immunohistochemistry and Western blot procedures are carried out to determine the quantitative morphological and neurochemical changes consequent in response to prenatal auditory cues. Such a paradigm may help understand beneficial effects or deficits and disorders related to language acquisition and learning in children.

Important Publications: **(1)** Cytodifferentiation and developing neuronal circuitry in the human lateral geniculate nucleus (1988) *Int. J. Devl. Neurosci.* **6**, 59–76. **(2)** Developing dentate nucleus in man: A qualitative and quantitative study (1992) *Exp. Brain Res.* **89**, 640–648. **(3)** Human retinal ganglion cell development in early prenatal period using carbocyanine dye (1993) *DiI. Neurosci. Lett.* **15,** 2: 173–178. **(4)** Expression of GABA in the foetal, postnatal and adult human retinas: An immunohistochemical study (1997) *Vis. Neurosci.* **14**, 425–432. **(5)** Photoreceptor morphogenesis in the human retina: A scanning electron microscopic study (1998) *Anat. Rec.* **252**, 133–139.

Memberships: Fellow: NASI 91; Indian Acad. Neurosci. 92; IBRO; SFN; IJDN; IGISS; NYAS; IAN; NAMS; ASI; EMSI.

Awards & Distinctions: H K Chatterjee Memorial Gold Medal 83 • Shakuntala Amir Chand Prize 88 • S S Bhatnagar Prize 91 • FAONS Best Poster Award • ASI Prof. Shamer Singh Memorial Oration 2002.

Wadia, Darashaw Nosherwan*

Elected: 1935
Specialization: Geology
Date and Place of Birth: 23 October 1883; Surat, Gujarat
Parents: Nosherwan Wadia and Cooverbai
Spouse and Children: Alan G Contractor and K Meher Gustadji
Last Address: Geological Survey of India, Indian Museum, Calcutta, India
***Deceased:** 15 June 1969

Education: Univ. of Baroda: BSc 1903 and 1905, MSc 1906.

Career: Prince of Wales College, Jammu: Prof. of Geology 1907–20; Geological Survey of India: Sci. Offr 21–28, Palaeontologist 28–38; Govt. Mineralogist, Ceylon 38–45; Govt. of India: Mineral Adviser 45–47; Indian Bureau of Mines: Dir 47–49; Atomic Energy Commission, Raw Materials Dn: Head 49–69.

Scientific work: Did pioneering work in unravelling the geological framework of Kashmir, Hazara and Waziristan in NW Himalaya. Tectonic interpretation of NW syntaxis of Himalaya was a significant contribution. Also made important advancement on the physiography, geology and economic minerology of Sri Lanka. Monumental work on NW Himalayas clearly indicated that the complex syntaxial bending of the Kashmir-Hazara region was produced due to the orogenic movement of the Great Himalayan range and thus put forward the hypothesis, that was quite contrary to the views of Edward Suess. Hypothesis on syntaxis proved by detailed geological mapping, reveals the continuity of 200 miles of the same two thrusting planes, covered by upper and lower limits of carboniferous Eocene Zone of this great syntaxial flexture. Classical studies of the structural features of Joya Mair dome of Jhelum Dist of West Punjab culminated in the discovery of oil many years after the paper was published.

Memberships: Member: Geological Soc. of London; German Geological Soc. • Fellow: Royal Soc. of London 57; INSA 35 • President: Calcutta Geographical Soc.; Geological Soc. of India 51–52.

Awards & Distinctions: Royal Geogr. Soc. • The Back Award 34 • Geol. Soc. of London • Lyall Medal 43 • Indian Assn for Adv. of Sci. Joyakishan Medal 44 • Royal Asiatic Soc • J C Bose Memorial Medal 47 • Natl. Geogr. Soc. Nehru Medal 50 • Leopald von Plakette Medal 60 • M N Saha Medal 62 • Padma Bhushan 62 • Khaitan Gold Medal 64 • Sarbadhikari Gold Medal 64.

Wadia, Noshir Hormusji

Elected: 1983
Position: Dir Neurology & Res., Jaslok Hospital and Res. Centre, Mumbai
Specialization: Clinical Neurology and Neurosciences
Date and Place of Birth: 20 January 1925; Surat, Gujarat
Parents: Hormusji and Dinamai
Spouse: Piroja
Address: Neurology & Research, Jaslok Hospital and Research Centre, 15, G Deshmukh Marg,
Mumbai 400 026, India
Tel. (022) 2367 4911, (022) 2363 4913 (O), (022) 2496 4799 (R)
email: nhwadia2@hotmail.com

Education: Univ. of Bombay: MBBS 48, MD 50; Univ. of London: MRCP 52, FRCP 70.

Career: Newcastle Gen. Hospital, UK: House Physician 52–53; Natl Hospital for Nervous Diseases, London: Res. Medical Offr 53–54; The London Hospital, UK: Registrar 54–56; J J Group of Hospitals, Mumbai: Hon. Asst Neurologist 56–61, Hon. Neurologist in-charge 61–82, Consultant Neurologist 82–; Grant Medical College, Mumbai: Lecturer 61–68, Hon. Prof 68–82; The Bombay Hospital: Vis Neurologist 58–73; The Balabhai Nanavati Hospital, Mumbai: Vis Consultant 66–76; The Jagjivanram Hospital, Mumbai: Cons. Neurologist 70–80; Sir Harkishandas Narrotamdas Hospital, Mumbai: Cons Neurologist 73–83; Jaslok Hospital & Res. Centre, Mumbai: Dir of Neurology 73, Dir of Research 2001; BARC and TIFR Mumbai: Cons. Neurologist: 66–.

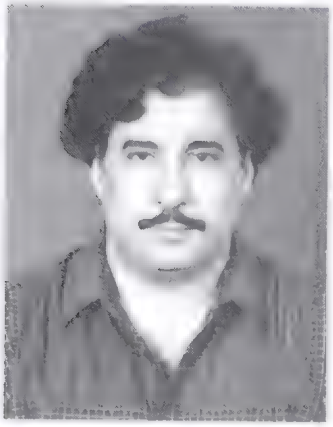
Scientific Work: Original contributions include clinical and pathological differentiation of myelopathy complicating atlanto-axial dislocation from other types of spinal cord compression and its high incidence in India; observations on manganese poisoning; characteristic pattern of familial spinocerebellar ataxia in India; neurological manifestations of acute haemorrhagic conjunctivitis; first description of the polio-like syndrome in the world.

Important Publications: **(1)** Myelopathy complicating atlanto-axial dislocation (study of 28 cases) (1967) *Brain* **90**, 449–472. **(2)** A new form of heredo-familial spinocerebellar degeneration with slow eye movements (nine families) (1971) *Brain* **94**, 359–374. **(3)** Lumbosacral radiculomyelopathy associated with pandemic acute haemorrhagic conjunctivitis (1973) *Lancet* **I**, 350–352. **(4)** Multiple sclerosis is prevalent in the Zoroastrians (Parsis) of India (1990) *Ann. Neurol.* **28**, 177–179. **(5)** A clinico-genetic analysis of six Indian spinocerebellar ataxia (SCA2) pedigrees – The significance of slow saccades in diagnosis (1998) *Brain* **121**, 2341–2355.

Memberships: Fellow: INSA 86; NAMS 72; Royal College of Physicians, London 70 • President: Neurological Soc. of India 63–64 • Vice-President: World Federation of Neurology 89–93 • Chmn: Membership Committee, World Federation of Neurology 99–2001, 2005–09.

Awards & Distinctions: Rameshwaradas Birla National Award 99 • Harvard Medical International and Wockhardt Ltd. Lifetime Achivement Award 2002 • INSA S S Bhatnagar Medal 2003 • Dhanvantari Medical Foundation Award 2003 • INSA Shree Dhanwantari Prize 2006 • Indian Academy of Neurology 2008 • World Federation of Neurology, International Neurology Award World Federation of Neurology 2009.

Wadia, Spenta Rustom



Elected: 1992
Position: Distinguished Prof., Ctr Dir Intl Centre for Theoretical Sci. TIFR, Mumbai
Specialization: Quantum Field Theory; String Theory and Quantum Gravity
Date and Place of Birth: 1 August 1950; Bombay
Parents: Rustom Wadia and Nergis
Spouse and Children: Leena Chandran; one *d*, one *s* (Neha, Varun)
Address: International Centre for Theoretical Sciences, Tata Institute of Fundamental Research,
Homi Bhabha Road, Mumbai 400 005, India
Tel. (022) 2278 2216 / 2287 (O), (022) 2280 4723 (R), Mobile: 98670 05229
email: wadia@theory.tifr.res.in; spenta.wadia@gmail.com; URL: http://www.theory.tifr.res.in/~wadia

Education: Univ. of Bombay: BSc 71; IIT Kanpur: MSc 73; City Univ. of New York, USA: PhD 78.

Career: City Univ. of New York, USA: Res. Assoc. 73–78; Univ. of Chicago, USA, Enrico Fermi Inst.: Fellow 78–80, Staff Sci. 80–82; Faculty of Tata Inst. of Fundamental Res., Mumbai: 82–86, Reader 86, Prof., Sr Prof. 2003–; School of Natural Sc., The Inst. for Advanced Study, USA: Vis. Member 90–91, CERN Geneva, Vis. Member 96–97, 2003–04.

Scientific Work: Main research contribution is to quantum field theory, string theory and black hole physics. In particular the discovery of the gauge fixing ambiguity in gauge theories; the discovery of the 3rd order large N phase transition in gauge theories (Gross–Witten–Wadia transition) and its possible application to the resolution singularities in general relativity; the discovery of the dilaton black hole solution in 2-dim. non-critical string theory; immergence of new space/time dimension in string theory from Liouville mode; the microscopic derivation of Hawking radiation of the near extremal D1–D5 black hole; integrability of string theory in anti-de Sitter space-time; the incompressible non-relativistic Navier–Stokes equation and its symmetries from string theory.

Important Publications: **(1)** *N* = Infinity phase transition in a class of exactly soluble model lattice gauge theories (1980) *Phys. Lett.* **B93**, 403. **(2)** Anomalies and nonlinear Lagrangian of low-energy, large N QCD (1985) *Phys. Rev.* **D31**, 3256. **(3)** Classical solutions of two-dimensional string theory (1991) *Mod. Phys. Lett.* **A6**, 1685. **(4)** Microscopic formulation of black holes in string theory (2002) *Phys. Rep.* **369**, 549. **(5)** Finite temperature effective action, AdS(5) black holes, and 1/*N* expansion (2005) *Phys. Rev.* **D71**, 124023.

Memberships: Fellow: INSA 97; New York Acad. Sci. 97 • NASI 2000; TWAS 2006 • Member: Commission on Mathematical Physics; Intl Union of Pure and Applied Physics IUPAP.

Awards & Distinctions: ICTP Steven Weinberg Prize 95 • TWAS Physics Prize 2004 • J C Bose Fellowship 2006.

Waghmare, Umesh Vasudeo

Elected: 2008
Position: Assoc. Prof., JNCASR, Bangalore
Specialization: Multi-Functional Oxide Materials; Nanostructures and their Properties; Applications of Geometric Phases in Materials Science
Date and Place of Birth: 19 September 1968; Dhule, Maharashtra
Parents: Vasudev Chintaman Waghmare and Shailaja
Spouse and Children: Aruna Mahendarkar; one *d*
Address: Theoretical Sciences Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur, Bangalore 560 064, India
Tel. (080) 2208 2842 (O), (080) 2362 2774 (R), Mobile: 94482 87711
email: waghmare@jncasr.ac.in; URL: http://www.jncasr.ac.in/waghmare

Education: IIT Mumbai: BTech 90; Yale Univ., USA: MPhil 94, MS 94, PhD 96

Career: Harvard Univ.: Postdoc Fellow 96–98, Res. Assoc. 98–2000; JNCASR: Faculty Fellow 2000–05; Assoc. Prof. 2005–.

Scientific Work: The central theme of research in the group is to determine properties of materials on the macroscopic and intermediate length and time scales through a non-empirical description of their chemistry and microscopic structure. It usually starts with computational solution of electronic motion treated within a quantum mechanical density functional theory and identifies the lowest energy degrees of freedom and their interactions. An effective (model) Hamiltonian is then derived by integrating out the rest of the degrees of freedom. This first-principles Hamiltonian is then used in large-scale simulations that yield properties of materials at different scales. Owing to continuing advances in computers and algorithms, it is now possible to characterize and design new materials, particularly at the nano-scale, based mostly on such simulations.

Important Publications: **(1)** Soft modes at the stacking faults in SiC crystals: First-principles calculations (2008) *Phys. Rev.* **B77**, 121203. **(2)** Ferroelectric transitions in ultra-thin films of $BaTiO_3$ (2007) *Phys. Rev. Lett.* **99**, 077601. **(3)** The origin of relaxor state in PSN (2006) *Phys. Rev. Lett.* **97**, 137601. **(4)** Epitaxial $BiFeO_3$ multiferroic thin film heterostructures, (2003) *Science* **299**, 1719. **(5)** *Ab initio* statistical mechanics of ferroelectric phase transition in $PbTiO_3$ (1997) *Phys. Rev.* **B55**, 6161.

Memberships: Fellow: NASI 2007.

Awards & Distinctions: IASc Assoc. 2000–03 • MRSI Bronze Medal 2004 • B M Birla Science Prize in Physics 2005.

Warke, Chindu Sona

Elected: 1981
Specialization: Theoretical Nuclear Physics
Date and Place of Birth: 23 Nov. 1931; Hingona, Jalgaon Dist, Maharashtra
Parents: Sona C and Kadarabai
Spouse and Children: Anjani; two *d*, one *s* (Sarita, Manisha, Nirmal)
Address: 203, Vigyanshila, Juhu-Varsova Link Road, Andheri (West), Mumbai 400 061, India
Tel. (022) 2631 5616 (R)

Education: Univ. of Poona: BSc 54, BSc Hons 55, MSc 56; Univ. of California, USA: PhD 64.

Career: TIFR, Bombay, Theory Group: Res. Asst 56–60, Res. Assoc. 65–66, Fellow 66–71, Reader 71–76, Assoc. Prof. 76–85, Prof. 85–91; Univ. of California, USA: Res. Asst 60–64, Postdoc Fellow 64–65; Niels Bohr Inst., Denmark: Vis. Sci. 69; McMaster Univ., Dept of Phys., USA: Vis. Prof. 75–76.

Scientific Work: Developed nuclear spectroscopy that preserves its spin and baryon number. Applied it to investigate nuclear properties of nuclei over the large regions of periodic table of elements. Derived strong force between two nucleons from the framework of quark models of quantum-chromo-dynamics. Discovered new Jost function solutions in scattering theory and multisoliton solutions of nonlinear Schrödinger equation. Pointed out the new effect of strong magnetic field on the structure of polyatomic molecules. Studied the many-body problems of liquid helium; atomic, molecular, nuclear scattering; and some problems of solid state physics.

Memberships: Maharashtra Acad. Sci.

Awards & Distinctions: NRC Canada Award 70–72 • G K Gadgil Prize 54.

Watve, Milind Gajanan

Elected: 2002
Position: Prof. IISER, Pune
Specialization: Wildlife Ecology; Animal Cognition; Evolutionary Biology, Computational Biology; Microbial Diversity
Date and Place of Birth: 12 December 1957; Pune, Maharashtra
Parents: Watve Gajanan Jeevan and Sushama
Spouse and Children: Archana; one *d*
Address: Department of Biology, Indian Institute of Science Education and Research,
900, NCL Innovation Park, Homi Bhaba Road, Pune 411 008, India
Tel. (020) 2588 1724 (O), (020) 2541 0510 (R), Mobile: 98229 10198
email: milind_watve@yahoo.com; milind@iiserpune.ac.in

Education: Univ. of Pune: BSc 77, MSc 79; IISc: PhD 94.

Career: Abasaheb Garware College, Pune: Lecturer 79–97, Head, Dept of Microbiology 98–2008; IISER, Pune: Prof. 2008–.

Scientific Work: Used research as a tool in undergraduate education and tried to use undergraduate creativity to explore virginlands of science and pioneer novel concepts. Owing to widely different interests and aptitudes of students was drawn into diverse areas of life science and lab contributed to wild life ecology, evolutionary biology, epidemiology and healthcare, bacterial cell cycle, microbial diversity, ecology based drug discovery, cognitive behaviour, social behaviour, sex and human mating system. Undergraduates are coauthors and even first authors in majority of papers and undergraduate research have contributed many novel concepts to science. Although the basic motive was only to encourage and nurture undergraduate curiosity, some of the outcomes were patented and successfully commercialized. That has been one of the major sources of reesearch funding as well.

Important Publications: **(1)** Evolutionary origins of insulin resistance: A behavioural switch hypothesis (2007) *BMC Evol. Biol.* **7**, 61. **(2)** Ageing may be a conditional strategic choice and not an inevitable outcome for bacteria (2006) *Proc. Natl Acad. Sci.* USA **103**, 14831–14835. **(3)** Bee-eaters (*Merops orientalis*) respond to what a predator can see (2002) *Animal Cognition* **5**, 253–259. **(4)** How many antibiotics are produced by the genus *Streptomyces*? (2001) *Arch. Microbiol.* **176**, 386–390. **(5)** Parasite loads of mammals: Correlates with host ecology (1995) *Proc. Natl Acad. Sci.*, USA **92**, 8945–8949.

Awards & Distinctions: FIE Foundation National Award 90 • Maharashtra State Literature Award 94 • Maharashtra State Literature Award 94–95 for Marathi book *Aranyaka* • Anveshan: National Innovation Award, Silver Medal 2004.

Wheeler, Thomas Sherlock*

Elected: 1934
Specialization: Organic, Synthetic and Physical Chemistry
Date and Place of Birth: 30 April 1899; Dublin
Parents: Martin Redmond Wheeler and Brigid Frances
Spouse and Children: Una Brigid; one *s*, two *d* (Desmond, Brenda, Thomasina)
Last Address: Royal Institute of Science, Bombay, India
***Deceased:** 13 December 1962

Education: Univ. of London, UK: BSc, PhD 24.

Career: Royal Technical College of Glasgow, UK: Demonstrator in Chem. 20–21; Royal Naval Cordite Factory, UK: Holton Heath Res. Investigator 21–23; Woolwich Arsenal, UK: Res. Chemist 23–28; Winnington Res. Labs, UK: Sr Res. Chemist 28–31; Royal Inst. of Sc., Bombay: Prof. of Org. Chem., Principal 23–28 & Dir 31; Univ. of Bombay, Dept. of Chemical Technol.: Vice-Chairman 32, Dean of Sc. Faculty 34–36; State Chemist, Ireland 38–45; Univ. College, Dublin: Chair of Chem. Dept 45–62, Dean of Sc. Faculty 51–62.

Scientific Work: Main work consisted of theoretical calculations including theory of liquids, organic chemistry including synthetic and mechanistic work, applied work relating to the development of industrial processes, various analytical studies, discussions of the education of chemists both at the university and secondary school levels and work on the lives of various Irish chemists. In the field of synthetic organic chemistry, work includes chalcone dihalides, Baker–Venkataraman transformation, 5–8 and 2-flavonoid rearrangements, Algar–Flynn–Oyamada reaction, stereochemistry, etc.

Memberships: Member: Inst. of Chemical Engineers 33 • Fellow: Inst. of Physics 32; INSA 35; Inst. of Chemistry.

Wolf, Ludwig*

Elected: 1934
Specialization: Chemistry
Last Address: J V D College of Science and Technology, Andhra University, Waltair
***Deceased**

Career: J V D College of Sci. and Technol., Waltair: Principal.

Yadav, Veejendra Kumar

Elected: 2007
Position: Prof., IIT, Kanpur
Specialization: Synthetic Organic Chemistry; Physical Organic Chemistry
Date and Place of Birth: 13 June 1956; Jaunpur, Uttar Pradesh
Parents: Shri Jokhan Yadav and Ghoora Devi
Spouse and Children: Arpita; two *s* (Dhananjay, Dhruv)
Address: Department of Chemistry,
Indian Institute of Technology, Kanpur 208 016, India
Tel. (0512) 259 7439 (O), (0512) 259 8544 (R), Mobile: 94151 34082
email: vijendra@iitk.ac.in; URL: http://home.iitk.ac.in/~vijendra

Education: Gorakhpur Univ.: BSc 75; BHU, Varanasi: MSc 77; MS Univ., Baroda: PhD 82.

Career: Malti Chem. Res. Centre, Baroda: Res. Asst 81–85; Univ. of Calgary: Postdoc Res. Asst 83–84; Memorial Univ. of Newfoundland: Postdoc Res. Assoc. 84–88; Univ. of Ottawa: Postdoc Res. Assoc. 88–89; Univ. of S California, Res. Assoc. 89–90; IIT Kanpur: Asst Prof. 90–97, Assoc. Prof. 97–2001, Prof. 2001.

Scientific work: Developed a simple theoretical model christened 'cation complexation model' for the prediction of pi-facial selectivity of a diverse range of cyclic ketones in reactions with nucleophiles. Combined theory with experiments and studied the facial selectivity caused by 1-oxa-3-thiolan function and explained the same using the above model. During such investigations demonstrated the unsuitability of anion-accelerated oxy-Cope rearrangement for the study of pi-facial selectivity as indeed used earlier by le Noble. Very recently provided both experimental and theoretical evidence to demonstrate beyond doubt, that the high anti-to sulpher selectivity of gamma- sulphenyl enones reported earlier was not controlled solely by the electronic effects of Sulphur as claimed, but largely by the steric effects arising from the substituents in the substrate and the nucleophile. Also pioneered the chemistry of silylmethyl-substituted cyclopropanes and discovered very interesting applications of the same to synthetic organic chemistry. Continues to focus in this area with promising results.

Important Publications: **(1)** *Angew Chem.* Int. Ed. (2004) **43**, 2669. **(2)** *J. Am. Chem. Soc.* (2004) **126**, 8652. **(3)** *J. Am. Chem. Soc.* (2005) **127**, 16366. **(4)** *Chem. Commun.* (2007) 5232–5234. **(5)** *Chem. Commun.* (2008) 3774–3776.

Memberships: American Chemical Soc.

Awards & Distinctions: Ramanna Fellowship 2007–12.

Yadava, Shyam Lal*

Elected: 1999
Specialization: Nonlinear Differential Equations
Date and Place of Birth: 5 July 1953; Ghanshyampur, Uttar Pradesh
Parents: Tahalal Yadava and Lakhani
Spouse: Krishnavati; one s (Kamalesh)
Last Address: TIFR Centre, IISc Campus, Bangalore 560012
***Deceased:** 7 June 2007

Education: Gorakhpur Univ.: BSc 74; Banaras Hindu University, Varanasi: MSc 77; BHU: PhD 79.

Career: TIFR Bangalore Centre: Res. Asst 81–87, Res. Assoc. 87–90, Fellow 90–92, Reader 92–97, Assoc. Prof. 97–2000, Prof. 2000–07.

Scientific work: Initially took interest in stochastic processes and did some work in stochastic calculus in locally convex spaces. Later, research interest shifted to partial differential equations (PDE). Made outstanding contributions to the theory of PDE and became a well-known expert of international repute. Major contributions lie in the area of semi-linear elliptic equations in a bounded domain. These equations have tremendous applications in diverse areas such as differential geometry, mathematical biology, astrophysics, etc. At the same time they are also challenging from a mathematical point of view and attracted the attention of leading mathematicians. Along with collaborators, proved the existence/non-existence and uniqueness results for these equations satisfying critical growth conditions on the nonlinearity with various types of boundary conditions. In this context, obtained relevant connection between the concentration points of minimal energy solutions and the critical points of the mean curvature of the boundary of the domain. Solved a well-known conjecture in this area.

Memberships: Fellow: INSA 2002.

Yajnik, Kirit Surendra

Elected: 1985
Specialization: Fluid Mechanics; Biogeochemical Ocean Modelling & Simulation
Date and Place of Birth: 7 March 1936; Ahmedabad, Gujarat
Parents: Surendralal Sakarlal Yajnik and Pramodini
Spouse: Kalyani; two *d* (Shanti, Maya)
Address: Apartment F2, Regal Manor, 2/1 Bride Street, Langford Town, Bangalore 560 025, India
Tel. (O), (080) 2227 6836 (R), Mobile: 93412 32587
email: ksy@cmmacs.ernet.in, ksyajnik@yahoo.com

Education: Gujarat Univ.: BE Elecl 57, BE Mech 58; Univ. of California, Berkeley, USA: MS 60, PhD 64.

Career: Univ. of California: Teaching Asst 58–59, Graduate Res. Engineer 61-62, Asst Specialist 63–64; IIT Kanpur: Lecturer 64–65, Asst Prof. 65–70, Assoc. Prof. 70–73; NAL, Bangalore: Sci. 71-96, Dir-Grade Sci. 90–96, Aeronautical Dn: Head 78–80, Fluid Mechanics Dn: Head 83–88, C-MMACS: Head 88–96, Hon. Sci. 2009–.

Scientific work: First formulation of asymptotic theory of turbulent boundary layer at large Reynolds number. Asymptotic theory of initial shear flows at large Reynolds number. Similarity laws in swirling turbulent flows. First experiments on passive devices to alter the large scale structure of turbulent boundary layer. Discovered new nonlinear integral transforms for boundary layers.

Important Publications: **(1)** Asymptotic theory of turbulent shear flows (1970) *J. Fluid Mechanics,* **42**, 411–427. **(2)** Experiments on swirling turbulent flows, Part 1- Similarity in swirling flows (1973) *J. Fluid Mechanics* **60**, 665–687. **(3)** Internal separated flow at large Reynolds number (1980) *J. Fluid Mechanics* **97**, 27–51. **(4)** A coupled physical-biological-chemical model for the Indian Ocean (2000) *Proc. Indian Acad. Sci.* (Earth & Planetary Sci.) **109**, 503–536. **(5)** Role of biology in the air-sea carbon flux in the Bay of Bengal and Arabian sea (2008) *J. Earth System Sci.* **117**, 429–428.

Memberships: Fellow: Institution of Engineers; Aeronautical Soc. of India; Indian Geophysical Union; Gujarat Sci. Acad • Am. Geophysical Union.

Awards & Distinctions: Shodhan Gold Medal 58 • Univ. of California Fellowship 59; Standard Oil Fellowship 61.

Yashonath, Subramanian

Elected: 1996
Position: Prof., IISc, Bangalore
Specialization: Physical Chemistry; Computational Chemistry; Intermolecular Forces; Diffusion within Porous and Dense Media
Date and Place of Birth: 9 October 1956; Birur, Karnataka
Parents: K Subramanian and K S Saroja
Address: Solid State & Structural Chemistry Unit, Indian Institute of Science, Bangalore 560 012, India
Tel. 080) 2293 2568 (O), (080) 2671 0482 (R)
email: yashonath@sscu.iisc.ernet.in, yashonat@hamsadvani.serc.iisc.ernet.in

Education: BITS, Pilani: MSc Hons 79; IISc, Bangalore: PhD 85.

Career: Cambridge Univ., UK: Postdoc Fellow 85–86; Royal Inst. of Great Britain, UK: Postdoc Fellow 86–87; Univ. of Penn.: Postdoc Fellow 87–88; IISc Bangalore: Res. Fellow 79-84, Project Asst 84–85, Lecturer 88–91; Asst Prof. 92–98, Assoc. Prof. 98–2004 Prof. 2004–; Univ. of Sassari, Italy: Vis. Prof. 2008.

Scientific work: Size dependence of self diffusivity has been found to exhibit an anomalous maximum in all condensed matter phases. The origin of this is in levitation effect. Among the many implications of this is the breakdown in Stokes–Einstein relationship. It also explains the correlation between ionic conductivity and activation energy in a wide variety of ionic glasses. This also explains the anomalous maximum seen in ionic conductivity of ions in solutions and pressure dependence of ionic conductivity. It has been shown that either van der Waals or long range Coulombic forces are required to observed this effect. A method has been proposed to study phase transitions in solids. This method overcomes the presence of rotation of the simulation cell in the Parrinello–Rahman method.

Important Publications: **(1)** Diffusion of sorbates in zeolite-Y and zeolite-A – novel dependence on sorbate size and strength of sorbate-zeolite interaction (1994) *J. Phys. Chem.* **98**, 6368. **(2)** Stokes–Einstein relationship and the levitation effect: Size-dependent diffusion maximum in dense fluids and close-packed disordered solids (2005) *J. Phys. Chem.* **B 109**, 5824. **(3)** Evidence in support of levitation effect as the reason for size dependence of ionic conductivity in water: A molecular dynamics simulation (2006) *J. Phys. Chem.* **B110**, 12179. **(4)** Breakdown of the Stokes–Einstein relationship: Role of interactions in the size dependence of self-diffusivity (2006) *J. Phys. Chem.* **B110**, 17207. **(5)** Correlation between conductivity or diffusivity and activation energy in amorphous solids, (2008) *J. Chem. Phys.* **129**, 144103.

Awards & Distinctions: IASc Assoc. 88–91 • Sudborough Medal 86 • Karnataka Assn of Sci.: Young Assoc. 85.

Yathindra, Narayanarao

Elected: 1989
Position: Dir, Inst of Bioinformatics and Applied Biotechnology, Bangalore
Specialization: Computational Structural Biology
Date and Place of Birth: 12 March 1944; Mysore, Karnataka
Parents: Narayanarao and Nagarathnamma
Spouse and Children: Kusuma; one *d*, (Madhuvanthi)
Address: Institute of Bioinformatics and Applied Biotechnology,
Biotech Park, Electronics City Phase I, Bangalore 560 100, India
Tel. (080) 2852 8900/8901/8902/8903 (O), (080) 6565 7034 (R)
email: yathindra@ibab.ac.in, yathindran@hotmail.com

Education: Univ. of Mysore: BSc 64, MSc 66; Univ. of Madras, Centre for Advanced Study in Biophysics: PG Diploma in Biophysics 67, PhD 71.

Career: Univ. of Madras, Centre for Advanced Study in Biophysics: Res. Asst 71; Univ. of Wisconsin, USA, Dept of Biochem.: Res. Assoc. 72–73, Project Assoc. 73–76; Univ. of Madras, Dept of Crystallography and Biophysics; Reader 77–84, Prof. 85–2004, Chmn, Dept of Cryst. & Biophysics and School of Physical Sci. 2000–03; Univ. of Madras: Dean-Academic 2000–2003; Inst. of Bioinformatics and Applied Biotechnology, Bangalore: Dir 2004–.

Scientific work: Work relating to nucleotide and internucleotide conformations provided a framework for description and understanding folded nucleic acids. Showed that left handed nucleic acid helices are possible with high anti-glycosyl conformation. Proposed `dinucleotide' as helical repeats for probing sequence dependent DNA duplexes. A general scheme of describing RNA/DNA backbone conformation in terms of `heminucleotide' was proposed. Demonstrated its utility in estimating random coil dimensions of polynucleotides, providing a correlation between tDNA exons and tRNA tertiary structure and RNA folds. Provided first details of 2', 5' DNA and 2', 5' RNA helices from NMR and modelling. Quantified base triplet non-isomorphism for probing sequence dependent DNA triplexes and showed that they can bend and curve by an interrupting non-isomorphic base triplet. Contributed towards sequence dependent fine structural properties of DNA and modelling DNA drug interactions. Showed experimentally that d(GC)n with $n < 7$ inhibit B to Z DNA transition and the CCC repeats can fold into intramolecular i-motif structures.

Important Publications: **(1)** Backbone conformations in secondary and tertiary structural units of nucleic acids. Constraint in the phosphodiester conformation (1974) *Proc. Natl. Acad. Sci* USA **71**, 3325. **(2)** Heminucleotide scheme – An effective probe in the analysis and descriptions of ordered polynucleotide (1982) *Biopolymers* **22**, 2061. **(3)** Evidence for intramolecularly folded i-DNA structures in biologically relevant CCC repeat sequences (1994) *Nucleic. Acids. Res.* **22**, 4634. **(4)** Stereochemistry of 2-, 5-linked nucleic acids and their constituents (1998) *J. Biomol. Struct. Dyn.* **16**, 313. **(5)** New Insights into DNA triplexes: Residual twist and radial difference as measures of base triplet non-isomorphism and their implication to sequence dependent non-uniform DNA triplex (2005) *Nucl. Acids. Res.* **33**, 43–55.

Memberships: Member: Indian Biophysical Soc.

Yegnanarayana, Bayya

Elected: 2004
Position: Prof. and Microsoft Chair, IIIT, Hyderabad
Specialization: Signal Processing; Speech and Vision; Artificial Neural Networks
Date and Place of Birth: 9 January 1944; Rajahmundry, Andhra Pradesh
Parents: B Ramamurthy and B Savitri
Spouse and Children: B Suseela Rani; two *d*
Address: International Institute of Information Technology, Gachibowli, Hyderabad 500 032, India
Tel. (040) 2300 1967/271 (O), (040) 2300 4627 (R), Mobile: 94418 86526
email: yegna@iiit.ac.in; URL: www.speech.cs.iitm.ernet.in/~yegna, www.iiit.ac.in

Education: Andhra Univ.: BSc 61; IISc, Bangalore: BE 64, ME 66, PhD 74.

Career: IISc: Sr Res. Asst 66–67, Lecturer 67–74, Asst Prof. 74–78; Carnegie Mellon Univ., USA: Vis. Assoc. Prof. 77–80; IIT Madras: Prof. 80–2006; IIIT-Hyderabad: Prof. & Microsoft Chair 2006–.

Scientific work: The main contribution is in demonstrating the significance of the impulse-like excitation of the vocal tract system during speech production. Several new signal processing techniques were developed to extract features at subsegmental, segmental and suprasegmental levels, and most of such methods involve non-spectral methods for processing. In the process the importance of the so called leftovers in speech signal processing, namely, the phase of the Fourier transform and the residual in linear prediction analysis was demonstrated in applications, including speech enhancement, speaker localization and tracking.

Important Publications: *Artificial Neural Networks* (1999) Prentice Hall India, New Delhi.

Memberships: INAE 95; INSA 99.

Awards & Distinctions: 3rd IETE S V C Aiya Memorial Award 96 • INAE S N Mitra Memorial Award 2006.

INDIAN ACADEMY OF SCIENCES
DIRECTORY OF FELLOWS – 2009

Index-Vol. II

Padayatty, Joseph Devassy 681
Padmanaban, Govindarajan 682
Padmanabhan, Kuppuswamy Anantha 683
Padmanabhan, Suchindrum Yegnanarayana* 684
Padmanabhan, Thanu 684
Pai, Mangalore Anantha 685
Paintal, Autar Singh* 686
Pal, Benjamin Peary* 687
Pal, Gaya Prasad 688
Pal, Manoj Kumar 689
Pal, Sankar Kumar 690
Pal, Sourav 691
Pal, Yash 692
Palacios, Gonzalo* 693
Palaniandavar, Mallayan 693
Palit, Dipak Kumar 694
Palit, Santi Ranjan* 695
Panchapakesan, Natarajan 696
Pancharatnam, Sivaramakrishna* 697
Panda, Dulal 697
Panda, Subrat Kumar 698
Pandalai, Krishnan Aditya Varman* 699
Pandey, Dhananjai 700
Pandey, Ganesh Prasad 701
Pandey, Prem Chand 701
Pandian, Thavamani Jegajothivel 702
Pandit, Aniruddha Bhalachandra 703
Pandit, Lalit Kumar* 704
Pandit, Rahul 704
Pandit, S R* 705
Pandita, Pran Nath 706
Pandya, Kantilal Chhaganlal* 707
Pandya, Sudhir Pradyumna 707
Panikkar, Nedumangattu Kesava* 708
Panse, Vinayak Govind* 709
Pant, Devi Datt* 709
Pant, Divya Darshan* 710
Paramasivan, Subramania* 711
Parameswaran, Aryampilly Jayanthan 711
Parameswaran, Hariharan* 712
Paranjape, Kapil Hari 713
Paranjpe, Gopal Ramachandra* 714
Paranjpe, Pramod Anand 714
Parija, Prankrushna* 715
Parimala, Raman 716
Parnaik, Veena Krishnaji 717
Parthasarathy, Kalyanapuram Rangachari 718
Parthasarathy, Rajagopalan 719
Parthasarathy, Thiruvenkatachari 720
Parulkar, Gurukumar Bhalchandra 721
Passi, Inder Bir Singh 722
Pasupathy, Jagadisan 723
Patel, Ambalal Ranchhodhbhai* 724
Patel, Chunibhai Chhotabhai* 724
Patel, Jamnadas Chaturbhai* 725
Patel, Jashbhai Shankerbhai* 726
Patel, Makanji Kalyanji* 726
Pathak, Kare Narain 727
Patnaik, Lalit Mohan 728
Patodi, Vijay Kumar* 729
Patwardhan, Vilas Shridhar 730
Paul, Ram Chand* 731
Peacock, David Henry* 732
Pental, Deepak 732
Periasamy, Mariappan 733
Periasamy, Nallagounder 734
Peters, Bernard* 735
Pichamuthu, Charles Solomon* 735
Pillai, Madhavan Radhakrishna 736
Pillai, Valliyil Narayanan Rajasekharan 737
Pisharoty, Pisharoth Raman* 738
Pitchappan, Ramaswamy 739
Pitke, Madhukar Vishwanath 740
Pradeep, Thalappil 741
Pradhan, Suresh Krishnarao* 742
Pradhan, Trilochan 743
Prakasa Rao, Bhagavatula Lakshmi Surya 744
Prakash, Vishweshwaraiah 745
Prasad, Dipendra 746
Prasad, Gopal 746
Prasad, Guntupalli Veera Raghavendra 747
Prasad, Malur Ramaswamyiyengar Narasimha* 748
Prasad, Phoolan 749
Prasad, Rajendra 750
Prasad, Ramavarma Raghu* 751
Prasad, Surendra 751
Prasad, Yellapregada Venkata Rama Krishna 752
Prasada Rao, Turaga Sundara Rama 753
Prathap, Gangan 754
Puntambekar, S V* 754
Puri, Gopal Singh* 755
Puri, Sanjay 755

Puri, Vishwambhar* 756
Purnachandra Rao, Venigalla 757

Qasim, Syed Zahoor 758

Racine, Charles S J* 759
Radhakrishna, Bangalore Puttaiya 759
Radhakrishna, Tallavajhala 760
Radhakrishnan, Amurtur Narayana (Aiyar)* 761
Radhakrishnan, Jaikumar 762
Radhakrishnan, Thavarool Puthiyedath 762
Radhakrishnan, Venkataraman 763
Raghava, Gajendra Pal Singh 764
Raghavan, Srinivasacharya 765
Raghavan, Tupil Srinivas* 766
Raghavendra, Agepati Srinivasa 767
Raghunathan, Madabusi Santanam 768
Raghunathan, Velayudhan Anandavally 769
Rai Choudhuri, Arnab 770
Rai Choudhury, Sudhendu 771
Rai, Shyam Sundar 771
Raj, Mahindra* 772
Raja Gopal, Erode Subramanian 773
Rajagopal, Cadambathur Tiruvenkatacharlu* 774
Rajagopalan, Sundarapandium Rama 774
Rajamani, Vedharaman 775
Rajan, Conjeeveram Srirangachari 776
Rajappa, Srinivasachari 777
Rajaraman, Ramamurti 778
Rajaraman, Vaidyeswaran 779
Rajasekaran, Guruswamy 780
Rajasekarasetty, Madhavasetty Ramalingam* 781
Rajasekharan, Ram 781
Raju, Trichur Ramaswamy 782
Ram Behari* 783
Ram Sagar 784
Rama Das, Vallabhaneni Sita 785
Rama Rao, Alla Venkata 786
Rama Rao, Lakshmiswara* 787
Rama Swamy, Subbarao* 787
Rama 788
Ramachandra Rao, Barry* 789
Ramachandra, Kanakanahalli 790
Ramachandra Row, Lakkaraju* 790
Ramachandran, Arcot 791
Ramachandran, Gopalasamudram Narayana* 792
Ramachandran, Janakiraman 793
Ramachandran, Lakshinarayanapuram Krishnaiyer* 793
Ramachandran, Raghavan 794
Ramachandran, Sundaresan 795
Ramadas, Trivandrum Ramakrishnan 796
Ramakrishna, Balakrishnan Siddartha 796
Ramakrishna, Basava Sri 797
Ramakrishnan, Alladi* 798
Ramakrishnan, Chandrasekharan 799
Ramakrishnan, Krishnaiyer* 800
Ramakrishnan, Moni 800
Ramakrishnan, Palayanoor Sivaswamy 801
Ramakrishnan, Srinivasan 802
Ramakrishnan, Subramaniam 803
Ramakrishnan, T S* 804
Ramakrishnan, Thekkepat* 804
Ramakrishnan, Tiruppattur Venkatachalamurti 805
Ramalingaswami, Vulimiri* 806
Ramamurthi, Balasubramanian* 807
Ramamurthy, Vaidhyanathan 808
Ramamurthy, Valangiman Subramanian 808
Raman, Chandrasekhara Venkata* 809
Raman, Rajiva 811
Ramanan, Sundararaman 811
Ramanathan, Annamalai* 812
Ramanathan, Kalpathy Gopalakrishna* 813
Ramanathan, Kalpathy Ramakrishnan* 813
Ramanathan, Kollagunta Gopalaiyer* 814
Ramanathan, Kumbakonam Viswanatha* 815
Ramanna, Raja* 816
Ramanujam, Chidambaram Padmanabhan* 817
Ramanujam, Srinivasa* 817
Ramanujam, S G Manavala* 818
Ramaraj, Ramasamy 819
Ramasami, Thirumalachari 820
Ramasesha, Suryanarayanasastry 821
Ramaseshan, Sivaraj* 822
Ramasubramanian, Sundareswaran 823
Ramaswami, Erode Krishnaswami* 824
Ramaswamy, Chandrasekhara* 824
Ramaswamy, Guruvayur Subramanian* 825
Ramaswamy, K L* 826
Ramaswamy, Melkote Krishnarao 826
Ramaswamy, Melkote Narasimhaiah* 827
Ramaswamy, Mythily 827
Ramaswamy, Ramakrishna 828
Ramaswamy, Sriram Rajagopal 829
Ramaswami, V* 830
Ramdas, Anant Krishna 830
Ramdas, Lakshminarayanapuram Ananthakrishnaiyer* 831
Ramdorai, Sujatha 832
Ramesh, Rengaswamy 833
Ramiah, Krishnaswamy* 834
Ramiah, P V* 835
Rana, Khadag Narsingh Jung Bhadur* 835
Randhawa, Mohinder Singh* 836

Ranganath, Gobbalipur Shamanna 836
Ranganath, Hassan Annegowda 837
Ranganathan, Darshan* 838
Ranganathan, S* 839
Ranganathan, Srinivasa 840
Ranganathan, Subramania 841
Rangarajan, Pundi Narasimhan 842
Rangarajan, Sarukkai Krishnamachary* 843
Rangaswami, Govindachetty* 843
Rangaswami, Srinivasa* 844
Rangaswamy, Nanjangud Sreekantaiah 845
Ranu, Brindaban Chandra 846
Rao, Argula Nagaraja* 847
Rao, Amur Narasinga* 847
Rao, Addicam Jagannadha 848
Rao, Aroor Pramesh 849
Rao, Ayyagari Sambasiva* 850
Rao, B K Narayana* 850
Rao, Bellur Rama* 851
Rao, Basavapatna Narayana Balakrishna* 852
Rao, Basrur Sanjiva* 852
Rao, Bijoor Sanjiva* 853
Rao, Coimbatore Raghavendra Narayana* 853
Rao, Chintakindi Venkata Hanumantha* 854
Rao, Calyampudi Radhakrishna 854
Rao, Chintamani Nagesa Ramachandra 855
Rao, Desirazu Narasimha 856
Rao, Dhanvada Madhava 857
Rao, K Ananda* 858
Rao, H Srinivasa* 858
Rao, Kokarachedu Nagabhushana* 859
Rao, Kandula Pampapathi* 860
Rao, Kotcherlakota Rangadhama* 860
Rao, Kalya Jagannatha 861
Rao, Kanury Venkata Subba 862
Rao, Kaza Kesava 863
Rao, Keshaviah Aswath Narain* 864
Rao, Krishnarao Raghavendra* 864
Rao, L Narayana* 865
Rao, M Anant Narayana* 865
Rao, Madhavarao Ranibennur Raghavendra* 866
Rao, Mattegunta Venkata Radhakrishna* 867
Rao, Maddali Nageswara 867
Rao, Manchanahalli Rangaswamy Satyanarayana 868
Rao, Mandagere Bharadwaj Ramachandra* 869
Rao, Mandikal Ramanna Aswathanarayana* 870
Rao, Nanduri Venkata Subba* 871
Rao, Palle Rama 871
Rao, Paranandi Venkata Suryanarayana 872
Rao, Patcha Ramachandra 873
Rao, Pavagada Krishna* 874
Rao, Pendyala Balarama 874
Rao, Potukuchi Suryaprakasa* 875
Rao, Ramachandra Raghavendra 876
Rao, S Raghavender* 877
Rao, Srinivasarao Srinivasa Moorthy* 877
Rao, Shimoga Nadiga Gundu* 878
Rao, Srikantiah Subba* 879
Rao, Subbarao Ramachandra* 879
Rao, Udipi Ramachandra 880
Rao, Vakethur Prabhakar* 881
Rao, Vallipe Ramgopal 882
Rao, Vallurupalli Sita Raghavendra 883
Rao, Yelseti Ramachandra* 884
Rastogi, Raghunath Prasad 884
Rastogi, Ram Gopal 885
Ratnasamy, Paul 886
Rau, A Subba* 887
Rau, Musiri Ananthapadmanabha Govinda* 887
Ravindranath, Vijayalakshmi 888
Ray, Deb Shankar 889
Raychaudhuri, Amal Kumar* 889
Raychaudhuri, Amitava 890
Raychaudhuri, Arup Kumar 891
Raymont, John Edwin George* 891
Reddy, Amulya Kumar Narayana* 892
Reddy, Arjula Ramachandra 893
Reddy, Chintala Raja Ram Mohan 894
Reddy, Vellenki Umapathi 894
Rindani, Saurabh Dilsukhrai 895
Rindani, Tansukh Harshadray 896
Rode, Keshava Prabhakar* 897
Rodrigues, Veronica Filomena 897
Rodriguez, Placid* 898
Row, Raghavendra* 899
Roy, Aditya Prasad 900
Roy, Ashit Baran 900
Roy, Durga Prasad 901
Roy, Pradip Ranjan* 902
Roy, Probir 903
Roy, Rajendra Prasad 904
Roy, Suhrid Kumar* 905
Roy, Shasanka Mohan 906
Roy, Siddhartha 906
Roy, Sujit 907
Roy, Supriya 908
Roy, Sures Chandra* 909
Roy, Tuhin Kumar 909
Roy Chaudhury, Sailendranath 910
Royds, Thomas* 911
Rudra, J J* 911
Rudraiah, Nanjundappa 912

Sabnis, T S* 913
Sachdev, Purushottam Lal* 913
Sadasivan, Toppur Seethapathy* 914
Sadhale, Parag Prabhakar 915
Saha, Ajit Kumar* 916
Sahasrabuddhe, D L* 917
Sahni, Ashok 917
Sahni, Birbal* 918
Sahni, Girish 919
Sahney, J C* 920
Sahni, Mulk Raj* 920
Sahni, Ruchi Ram* 921
Sahni, Varun Bhisham 921
Saidapur, Srinivas Kishanrao 922
Salaskar, Vishwanath Hari* 923
Saldanha, Cecil John* 924
Salunke, Dinakar Mashnu 924
Samanta, Anunay 925
Sampath, Srinivasan 926
Sampathkumaran, Echur Varadadesikan 927
Sampathkumaran, Mandayam Ananthanpillai* 928
Samuel, Gnanabishagam* 928
Samuel, R* 929
Sane, Prafullachandra Vishnu 929
Sanjappa, Munivenkatappa 930
Sankara Rao, Kolluri 931
Sankaran, G* 932
Sankaran, Parameswaran 932
Santappa, Mushi 933
Santhanam, Vaidyanathaswamy 934
Sanyal, Milan Kumar 935
Sanyal, Suhas Chandra 935
Sarabhai, Anand 936
Sarabhai, Vikram Ambalal* 937
Sarin, Manmohan 938
Sarin, Shiv Kumar 939
Sarkar, Chitra 940
Sarkar, Debi Prasad 941
Sarkar, Pranab Kumar 942
Sarkar, Sabyasachi 943
Sarkar, Samarendra Nath* 944
Sarkar, Utpal 945
Sarma, Dipankar Das 946
Sarma, Isukapalli Gopala* 947
Sarma, Nidumolu Venkata Gurunadha* 947
Sarma, Padubidri Subbaraya* 948
Sarma, Vallury Visweswara Subrahmanya 949
Sasisekharan, Viswanathan 949
Sastri, B Nanjunda* 950
Sastry, Murali 950
Sastry, Sosale Garalapuri* 951
Sastry, Srikanth 951
Sastry, Therizhandur Panchapagesa Bhaskara* 952
Sathyamurthy, Narayanasami 953
Satya Murthy, Nivarthi Suryanarayana* 954
Satyanand, Dev* 954
Satya Prakash* 955
Satya Prakash 956
Savithri, Handanahal Subbarao 957
Savoor, Sadashiva Rao* 958
Savur, Srinivasa Rao* 958
Sawhney, Kalidas* 959
Saxena, Rajiv Krishna 959
Sebastian, Kizhakeyil Lukose 960
Sen, Abhijit 961
Sen, Ashoke 962
Sen, Diptiman 963
Sen, Kalidas 964
Sen, Prafulla Kumar* 965
Sen, Sandeep 965
Sengupta, Surajit 966
Sen-Sarma, Parimal Kumar* 967
Seshachar, Bagepalli Ramachandrachar* 968
Seshadri, Conjeevaram Srirangachari 968
Seshadri, Sekharipuram Narayana(Iyer)* 969
Seshadri, Tirukkanangindi Natesa* 970
Seshadri, Thiruvenkata Rajendra* 970
Seshagiri, Narasimhiah 971
Seshaiya, Rebala Venkata* 972
Seth, Bhoj Raj* 973
Seth, Jagat Bihari* 974
Sethi, Nihal Karan* 974
Sethi, Pramod Karan* 975
Sethna, Homi Nusserwanji 976
Sethunathan, Nambrattil 977
Shabde, N G* 977
Shah, Madhavlal Sukhlal* 978
Shah, N M* 978
Shah, Nimish Arun 978
Shah, Ramanlal Chhaganlal* 979
Shah, Swarupchand Mohanlal* 980
Shaha, Chandrima 980
Shaila, Melkote Subbarao 981
Shanbhag, Bhagyashri Achut 982
Shankar, Jagdish* 983
Shankar, Pattamadai Narasimhan 984
Shanmugam, Govindaswamy 984
Sharma, Anurag 985
Sharma, Archana* 986
Sharma, Arun Kumar 987
Sharma, Ashutosh 988
Sharma, Kamal Nath 989
Sharma, Man Mohan 990
Sharma, Niranjan Lal* 991

Sharma, Ram Prakash 991
Sharma, Ram Swaroop 992
Sharma, Rameshwar Prasad 993
Sharma, Shobhona 994
Sharma, Surinder Mohan 995
Sharma, Vinod Prakash 996
Sharma, Yagya Dutta 997
Sharma, Yogendra 998
Shashidhar, Ranganathan 999
Shashidhara, Lingadahalli Subrahmanya 1000
Shastri, Nilkanth Abaji* 1001
Shastry, Balajapalli Sriram 1002
Shastry, Sishta Venkata Seetharama 1003
Shenoi, Sadananda Satheesh Chandra 1004
Shenoy, Subodh Raghunath 1005
Sheth, Anil Ramanbhai* 1006
Sheth, Shantilal Chhaganlal* 1007
Shetty, Hunthrike Shekar 1008
Shetye, Satish Ramnath 1009
Shivanna, Kundaranahalli Ramalingaiah 1010
Shorey, Tarlok Nath 1011
Shri, Ranjan* 1011
Shrikhande, Sharadchandra Shankar 1012
Shyam Sundar 1013
Shyamasundar, Rudrapatna Kallikote 1014
Sibaiya, L* 1015
Siddiqi, Imran 1015
Siddiqi, Mohammad Raziuddin* 1016
Siddiqi, Obaid 1017
Siddiqi, Salimuzzaman* 1018
Sikka, Devraj 1019
Sikka, Satinder Kumar 1019
Simon, Rajiah 1020
Singh, Anil Kumar 1021
Singh, Bawa Kartar* 1022
Singh, Balwant 1023
Singh, Bam Bahadur 1024
Singh, Bhola Nath* 1025
Singh, Digvijai 1026
Singh, Harkesh Bahadur 1027
Singh, Inderjit* 1028
Singh, Jamuna Sharan 1028
Singh, Kulinder Pal 1029
Singh, Lalji 1030
Singh, Mewa 1031
Singh, Randhir 1032
Singh, Rishi Narain 1033
Singh, Sarva Jit 1034
Singh, Tej Pal 1035
Singh, Udai Narain* 1036
Singh, Vinod Kumar 1037
Singh, Virendra 1038
Singh, Yashwant 1039
Singhi, Navin Kumar Madhavprasad 1040
Singhvi, Ashok Kumar 1041
Sinha, Akhoury Purnendu Bhusan 1042
Sinha, Bikash Chandra 1042
Sinha, Kalyan Bidhan 1043
Sinha, Krityunjai Prasad 1044
Sinha, Pratima 1045
Sinha, Somdatta 1046
Sinha, Subrata 1047
Sinha, Suresh Kumar* 1048
Sirsat, Satyavati Motiram 1049
Sitaram, Alladi 1049
Sitaramam, Vetury 1050
Sivaraman, Churya 1051
Sivan, M R Ramaswami* 1052
Sivaram, Swaminathan 1052
Sivasanker, Subramanian 1053
Sokhey, Sahib Singh* 1054
Somasundaram, Kumaravel 1055
Somayajulu, Bhamidipati Lakshmidhara Kanakadri 1056
Sonti, Ramesh Venkata 1057
Sood, Ajay Kumar 1058
Sopory, Sudhir Kumar 1059
Sreekantan, Badanaval Venkata 1060
Sreenivasaiah, Bettadapur Narasimhaiah* 1061
Sreenivasan, Arunachala* 1061
Sreenivasan, Kasi* 1062
Sreenivasaya, Motnahalli* 1063
Sri Niwas 1064
Srianand, Raghunathan 1065
Sridharan, Asuri 1065
Sridharan, Rajagopal 1066
Sridharan, Ramaiyengar 1067
Srikantiah, C* 1068
Srikrishna, Adusumilli 1068
Srinath, Laxmipuram Srinivasachar 1069
Srinivas, Vasudevan 1070
Srinivasaiengar, Chickmagalur Narayanaiengar* 1071
Srinivasan, Ganesan 1071
Srinivasan, Jayaraman 1072
Srinivasan, Mandakolathoor Subrahmanya 1073
Srinivasan, Narayanaswamy 1074
Srinivasan, Ramachandran* 1075
Srinivasan, Ramanujam* 1076
Srinivasan, Ramaswami 1076
Srinivasan, Ramaswamiah 1077
Srinivasan, Sumangali Kidambi* 1078
Srinivasan, V* 1079
Sriramachari, Samavedam Srinivasa 1079

Srivastava, Deepak Chandra 1080
Subba Rao, Bookinakere Ramakrishnaiya 1081
Subba Rao, Bookinkere Channakeshavaiah 1081
Subba Rao, Ganugapati Sree Rama 1082
Subba Rao, Gundlapalli Venkata 1083
Subbaramiah, K* 1084
Subbarao, Eleswarapu Chinna 1084
Subbarao, Kaigala Venkata 1085
Subbaraya, Tippur Subbarayashastry* 1086
Subrahmanya, Chelur Ramachandra 1086
Subrahmanyam, Nekkalapudi Chinna 1087
Subrahmanyan, Ramakrishnan* 1088
Subrahmanyan, Vaidyanatha* 1089
Subramaniam, Anantharaman Parameswaran* 1090
Subramaniam, M K* 1091
Subramanian, Chirayathumadom Venkatachalier 1091
Subramanian, Dubagunta 1092
Subramanian, Sankaran 1093
Subramanian, Toppur Seethapathy* 1094
Subramanyam, Krishnaier* 1094
Subramanyam, Somenahalli Venkatesarao 1095
Sudarshan, Ennackal Chandy George 1096
Sukh Dev 1097
Sukhatme, Pandurang Vasudeo* 1098
Sukhatme, Suhas Pandurang 1099
Sukumar, Raman 1100
Sundar, Chakram Sampathkumaran 1101
Sundara Raj, B* 1102
Sundaram, Anantharaman Kalyana* 1102
Sundaram, Chokkanathapuram Venkataraman* 1103
Sundaram, Krishna* 1104
Sundaram, Subramania 1105
Memberships: FRSC (London); FTI (Manchester) 1105
Sundararajan, Govindan 1105
Sunder, Ramasubbu 1106
Sunder, Viakalathur Shankar 1107
Surange, Krishna Rajaram 1108
Suresh, Venapally 1108
Surjit, Singh* 1109
Surolia, Avadhesha 1110
Surolia, Namita 1111
Susheela, Andezhath Kumaran 1112
Suryanarayanan, Subrahmanyan* 1113
Sushil Kumar 1114
Swaminathan, Monkombu Sambasivan 1115
Swaminathan, Sambasiva 1116
Swamy, Musti Joginadha 1117
Swarup, Ghanshyam 1118
Swarup, Govind 1119

Tahseen, Qudsia 1120
Talwar, Gursaran Parshad 1121
Tamhankar, Ramachandra Vaman* 1122
Tandon, Prakash Narain 1123
Tandon, Ram Narayan* 1124
Tandon, Sampat Kumar 1125
Tandon, Shyam Narayan 1126
Taqui Khan, Mirza Mohammad 1127
Tawde, Nanasaheb Ramji* 1127
Taylor, Edward McKenzie* 1128
Taylor, Harold John* 1129
Telang, A V* 1129
Thacker, Maneklal Sankalchand* 1130
Thakur, R S* 1130
Thakur, Vikram Chandra 1131
Thangavelu, Sundaram 1132
Thapar, Gobind Singh* 1133
Thathachar, Mandayam Anandampillai Lakshmi 1134
Thelma, Bittianda Kuttapa 1135
Thiagarajan, Pazhamaneri Subramaniam 1136
Thind, Kartar Singh* 1136
Thomas, George Kakkudiyil 1137
Thomas, Joseph* 1138
Thosar, Baji Vinayak* 1139
Tilak, Bal Dattatraya* 1140
Tirumurti, Tirunelveli Subbaiyer* 1141
Trehan, Surindar Kumar 1141
Trivedi, Sandip Parimal 1142
Tuli, Rakesh 1143
Tuteja, Narendra 1144
Tyagi, Akhilesh Kumar 1145
Tyagi, Anil Kumar 1146
Tyagi, Jaya Sivaswami 1147

Udgaonkar, Bhalchandra Madhav 1148
Udgaonkar, Jayant Bhalchandra 1149
Uma Shaanker, Ramanan 1150
Umapathy, Siva 1151
Uppal, Badri Nath* 1152

Vaidhianathan, V I* 1153
Vaidya, Prahlad Chunilal 1153
Vaidyanathan, Chelakara Sivarama* 1154
Vaidyanathan, M* 1155
Vaidyanathaswamy, R* 1155
Vairamani, Mariappanadar 1156
Vakil, Kapilram* 1157
Vakil, Rustom Jal* 1157

Valdiya, Khadg Singh 1158
Valiathan, Marthanda Varma Sankaran 1159
Valluri, Sitaram Rao 1160
Vankar, Yashwant Dattatraya 1161
Vanninathan, Muthusamy 1162
Varadachari, Veeravalli Venkata Ranga* 1163
Varadarajan, Manakkal Ganesa* 1164
Varadarajan, Raghavan 1164
Varadarajan, Srinivasan 1165
Vardya, Mahendra Singh 1166
Varghese, Thundil George* 1167
Varma, Rama Shankar* 1167
Varma, Ram Kumar 1168
Varma, Ravi Martanda 1169
Varshney, Umesh 1170
Vasudevan, Sukumaran 1171
Vazifdar, S S* 1171
Veluthambi, Karuppannan 1172
Venkataraman, Balu 1173
Venkataraman, Ganesan 1174
Venkataraman, Gopalasamudram Sitaraman* 1175
Venkataraman, Krishnaswami* 1176
Venkataraman, Meenakshisundaram* 1176
Venkataraman, Tiruvadi Sambasiva* 1177
Venkataraman, Taracad Venkitakrishna* 1177
Venkataramana, Tyakal Nanjundiah 1178
Venkataramani, Kaniyur Sundaram 1179
Venkatarayudu, Tallamraju* 1180
Venkatasubramanian, Vettaikkorumakankav
  Sivaramaier* 1180
Venkatesachar, Bachalli* 1181
Venkatesan, Kailasam 1182
Venkatesh, Yedatore Venkatakrishnaiya 1183
Venkateswara Rao, Gundabathula 1184
Venkateswaran, C S* 1185
Venkateswaran, R* 1185
Venkateswaran, S* 1185
Venkateswarlu, Jillela* 1186
Venkateswarlu, Kunapuli* 1187
Venkateswarlu, Putcha* 1188
Venkiteshwaran, Sekharipuram Padmanabhier* 1189
Venkoba Rao, Antapur* 1190
Verma, Ajit Ram* 1191
Vidyasagar, Mathukumalli 1192
VijayRaghavan, Krishnaswamy 1193
Vijayamohanan, Kunjukrishna Pillai 1193
Vijayan, Mamannamana 1194
Vijayaraghavacharya, T* 1195
Vijayaraghavan, Ramanuja 1196
Vijayaraghavan, Tirukkannapuram* 1197
Vijayraghavan, Usha 1197
Vinayachandran, Puthenveettil
  NarayanaMenon 1198
Vishveshwara, C V 1199
Vishveshwara, Saraswathi 1200
Visvesvaraya, Mokshagundam* 1201
Viswa Nath, Bhagavatula* 1202
Viswamitra, Mysore Ananthamurthy* 1203
Viswanadham, Nukala 1204
Viswanathan, Dharmavadani Krishnaiyar* 1204
Viswanathan, Kalakad Sundaram* 1205
Visweswariah, Sandhya Srikant 1206
Vrati, Sudhanshu 1207

Wadhwa, Shashi 1208
Wadia, Darashaw Nosherwan* 1209
Wadia, Noshir Hormusji 1210
Wadia, Spenta Rustom 1211
Waghmare, Umesh Vasudeo 1212
Warke, Chindu Sona 1213
Watve, Milind Gajanan 1213
Wheeler, Thomas Sherlock* 1214
Wolf, Ludwig* 1215

Yadav, Veejendra Kumar 1216
Yadava, Shyam Lal* 1217
Yajnik, Kirit Surendra 1218
Yashonath, Subramanian 1219
Yathindra, Narayanarao 1220
Yegnanarayana, Bayya 1221

Notes and Abbreviations

Notes

1. Due to limitation of space, names of co-authors under "**Important Publications**" could not be included.
2. To make the entries as concise as possible, all years pertaining to the 20th century are abbreviated to the last two digits only; e.g. 00 refers to the year 1900. In the case of year pertaining to the 19th Century and the 21st Century, the years are written in full.
3. In the case of names of spouse and children, only the maiden names are mentioned.

Abbreviations

Acad.	Academy
Admn	Administration
AEC	Atomic Energy Commission
AFST	Association for Food Scientists and Technologists
Agri.	Agriculture
AIIMS	All India Institute of Medical Sciences
AIISc	Associate of Indian Institute of Science
AMU	Aligarh Muslim University
AP	Andhra Pradesh
Assn	Association
Assoc.	Associate
Asst	Assistant
b	Date of Birth
BARC	Bhabha Atomic Research Centre
Bd	Board
BHEL	Bharath Heavy Electricals Limited
BHU	Banaras Hindu University
Biochem.	Biochemistry
Biotech.	Biotechnology
BITS	Birla Institute of Technology and Science
BSIR	Board of Scientific and Industrial Research
CAIR	Centre for Artificial Intelligence and Robotics
Caltech	California Institute of Technology
CAT	Centre for Advanced Technology
CBIP	Central Board of Irrigation & Power
CBRI	Central Building Research Institute
CCMB	Centre for Cellular and Molecular Biology
CDRI	Central Drug Research Institute
CFTRI	Central Food Technological Research Institute
CGWB	Central Ground Water Board
Chem.	Chemistry
Chmn	Chairman
CIMAP	Central Institute of Medicinal and Aromatic Plants
CLRI	Central Leather Research Institute
CMC	Christian Medical College

CMFRI	Central Marine Fisheries Research Institute
Co.	Company
COSTED	Committee on Science & Technology in Developing Countries
CRRI	Central Road Research Institute
CSIR	Council of Scientific & Industrial Research
d	Daughter(s)
Dept	Department
Dir	Director
DMRL	Defence Metallurgical Research Laboratory
Dn	Division
DSIR	Department of Scientific & Industrial Research
DST	Department of Science and Technology
Dy	Deputy
Edn	Education
Engg	Engineering
FAO	Food and Agricultural Organization
FICCI	Federation of Indian Chambers of Commerce & Industry
FNA	Fellow of National Academy of Sciences
FRCS	Fellow of Royal College of Surgeons
FRI	Forest Research Institute
Geol.	Geology
GNDU	Guru Nanak Dev University
Govt	Government
GSI	Geological Survey of India
GTRE	Gas Turbine Research Establishment
h c	honoris causa
HAL	Hindustan Aeronautics Limited
Hon.	Honorary
Hons	Honours
IACS	Indian Association for the Cultivation of Science
IAEA	International Atomic Energy Agency
IARI	Indian Agricultural Research Institute
IAS	Institute of Advanced Studies
IASc	Indian Academy of Sciences
IAU	International Astronomical Union
ICAR	Indian Council of Agricultural Research
ICMR	Indian Council of Medical Research
ICTP	International Centre for Theoretical Physics
IEEE	Institute of Electrical & Electronic Engineers
IETE	Institution of Electronics & Telecommunication Engineers
IGCAR	Indira Gandhi Centre for Atomic Research
IIA	Indian Institute of Astrophysics
IICB	Indian Institute of Chemical Biology
IICT	Indian Institute of Chemical Technology
IISc	Indian Institute of Science
IIP	Indian Institute of Petroleum
IIT	Indian Institute of Technology

IITM	Indian Institute of Tropical Meteorology
IMD	India Meteorological Department
IMSc	Institute of Mathematical Sciences
IMT	Institute of Microbial Technology
INSA	Indian National Science Academy (1954–70 known as NIS)
Inst.	Institute
Intl	International
IPCL	Indian Petrochemical Corporation Limited
IRRI	International Rice Research Institute
ISEC	Institute for Social and Economic Change
ISI	Indian Statistical Institute
ISRO	Indian Space Research Organization
IUCAA	Inter-University Centre for Astronomy and Astrophysics
IUGC	International Union of Geodesy and Geophysics
IUPAC	International Union for Pure and Applied Chemistry
JNCASR	Jawaharlal Nehru Centre for Advanced Scientific Research
JNU	Jawaharlal Nehru University
Jr	Junior
Jt	Joint
J&K	Jammu & Kashmir
KMC	Kasturba Medical College
Lab.	Laboratory
LCA	Light Combat Aircraft
LRDE	Electronics & Radar Development Establishment
Ltd	Limited
MATSCIENCE	Institute of Mathematical Sciences
MCC	Madras Christian College
Med.	Medical
MIT	Massachusetts Institute of Technology
MP	Madhya Pradesh
MRIMMP	Mehta Research Institute for Mathematics and Mathematical Physics
NAL	National Aerospace Laboratories
NASA	National Aeronautics & Space Agency
Natl	National
NCL	National Chemical Laboratory
NCRA	National Centre for Radio Astrophysics
NEHU	North-Eastern Hill University
NGRI	National Geophysical Research Institute
NIAS	National Institute of Advanced Studies
NIH	National Institute of Health
NII	National Institute of Immunology
NIMHANS	National Institute of Mental Health and Neuro Sciences
NIN	National Institute of Nutrition
NIS	National Institute of Sciences (since 1970 known as INSA)
NIV	National Institute of Virology
NPL	National Physical Laboratory
NRC	National Research Council

ISBN 978-81-85324-15-9